Stara

Constant Evolution

VICTORIA TOP PNEUMATIC

Planter

Instruction Manual

MANU-6009-ING Rev. D

Constant Evolution

VICTORIA TOP PNEUMATIC PLANTER

INSTRUCTION MANUAL

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FOREWORD

This user manual was designed to guide you in the operation of your implement, its components, and to instruct you on operation procedures and maintenance.

Read this manual thoroughly before using this product for the first time, and make sure to take all the necessary safety precautions.

This manual should be considered as a fundamental part and should be well cared for so that it is always available for review since it contains instructions starting with the purchase of the implement or machine to maintenance and long term care. At the end, there are also instructions on Warranty Terms, Warranty Registration, Technical Delivery and Technical Check-up.

Due to the constant evolution of our products, Stara reserves the right to make changes to the contents of this manual without prior notice.

This manual is available on our site www.stara.com.br, along with information on our entire product line.

INTRODUCTION

Dear client, you have just become the proud owner of an implement manufactured with the highest cutting edge technologies, and which had the direct involvement of rural producers in its development.

The Victoria Top Pneumatic planter is a machine which plants small seed grains with precision, using a standard 45 cm row spacing, and having the availability of additional row spacings, as specified by technical specifications. The fertilizer distribution is done by an auger conveyor screw system, with spacing options of ¾", 1" and 2". Its fertilizer reservoir is made of polyethylene (anti-corrosive material). There are two line type system options, row flexible and a row rigid systems, for either fertilizer or seeding systems. The seeding distribution is done via perforated discs, with individual line planting seed hopper reservoirs.

Pivoting hitch, with machine leveling adjustment plates. Also, with independent wheel suspensions. Driven by a central hydraulic controller, having the availability to install hydraulic line markers (optional).

The Victoria Top Pneumatic planter when used correctly and being properly maintained, can have a long working life, thus becoming a rich investment and highly profitable For this reason it is imperative that the instruction manual be read attentively, and its pages should be consulted whenever there are doubts or questions.

Stara offers its Technical Assistance Team to assist you and/or your dealership, in the hopes that you will optimize the use of your implement.

1 - MAIN COMPONENTS

The Victoria Top Pneumatic planter is made up of a set of basic parts, as shown on figure below:

A - Hitch

B - Chassis

C - Row marker

D - Fertilizer reservoirs

E - Seed reservoirs

F - Wheel/axle assembly

G - Seed lines

H - Plow shanks

I - Hydraulic motor

J - Transmission box

K - Catwalk/grating

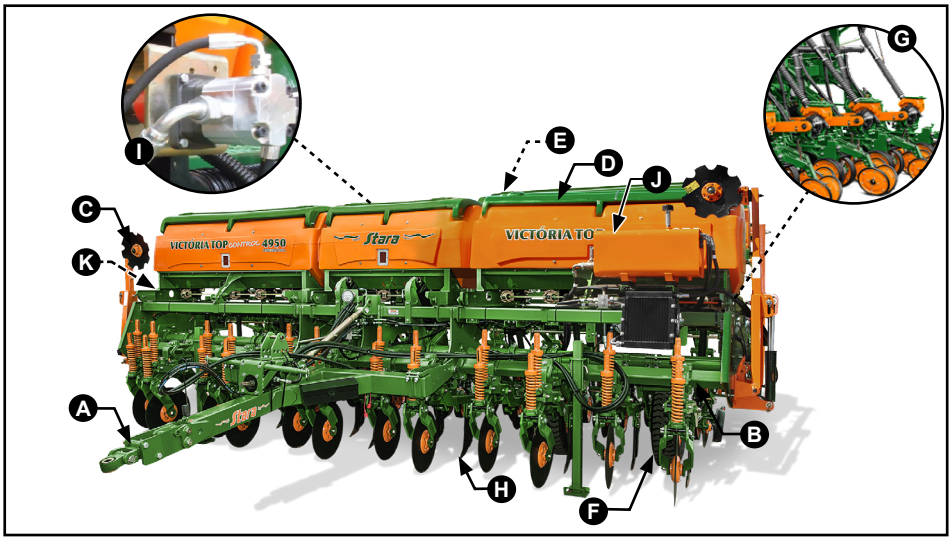

Figure 1

2 - IDENTIFICATION PLATE

All of Stara's implements have an identification plate, which contains the weight, capacity, model, manufactured date and its serial number.

When requesting a part or seeking any information from your dealership, supply the above information regarding your implement.

The identification plate (Figure 2) is fixed to the chassis of the implement.

Figure 2

3 - TECHNICAL SPECIFICATIONS

MODEL	VICTORIA 3600	VICTORIA 4050	VICTORIA 4500	VICTORIA 4950
Standard	9 lines x 45 cm	10 lines x 45 cm	11 lines x 45 cm	12 lines x 45 cm
(1) Optional N° of lines x Row spacing	*10 lines x 40 cm *9 lines x 45 cm 8 lines x 50 cm 8 lines x 55 cm 7 lines x 60 cm 7 lines x 65 cm 6 lines x 70 cm 6 lines x 75 cm 5 lines x 85 cm 5 lines x 90 cm	*11 lines x 40 cm *10 lines x 45 cm 9 lines x 50 cm 8 lines x 55 cm 8 lines x 60 cm 7 lines x 65 cm 6 lines x 70 cm 6 lines x 75 cm 6 lines x 80 cm 5 lines x 90 cm	**12 lines x 40 cm *11 lines x 45 cm 10 lines x 50 cm 8 lines x 60 cm 8 lines x 65 cm 7 lines x 70 cm 7 lines x 75 cm 6 lines x 80 cm 6 lines x 85 cm	*13 lines x 40 cm *12 lines x 45 cm 11 lines x 50 cm 10 lines x 55 cm 9 lines x 60 cm 9 lines x 65 cm 8 lines x 70 cm 8 lines x 75 cm 7 lines x 80 cm 7 lines x 85 cm 6 lines x 90 cm
(2) Working width	3.6 m	4.05 m	4.5 m	4.95 m
(3) Standard implement power requirements	117 hp (spaced shanks) 90 hp (dual cutting discs)	130 hp (spaced shanks) 100 hp (dual cutting discs)	143 hp (spaced shanks) 110 hp (dual cutting discs)	156 hp (spaced shanks) 120 hp (dual cutting discs)
Tires	4 tires, 750 x 16” (12 ply) 90 PSI	4 tires, 750 x 16” (12 ply) 90 PSI	4 tires, 750 x 16” (12 ply) 90 PSI	4 tires, 750 x 16” (12 ply) 90 PSI
(4) Seed capacity	60 liters ~ 50 kg p/ line	60 liters ~ 50 kg p/ line	60 liters ~ 50 kg p/ line	60 liters ~ 50 kg p/ line
(5) Fertilizer capacity	1371 liters ~ 1550 kg	1518 liters ~ 1700 kg	1637 liters ~ 1850 kg	1875 liters ~ 2100 kg
Job speeds	6 to 8 km/h (soy) 4 to 6 km/h (corn)	6 to 8 km/h (soy) 4 to 6 km/h (corn)	6 to 8 km/h (soy) 4 to 6 km/h (corn)	6 to 8 km/h (soy) 4 to 6 km/h (corn)

Table 1

MODEL	VICTORIA 5400	VICTORIA 5850	VICTORIA 6300	VICTORIA 7250
Standard	13 lines x 45 cm	14 lines x 45 cm	15 lines x 45 cm	17 lines x 45 cm
(1) Optional N° of lines x Row spacing	*14 lines x 40 cm *13 lines x 45 cm 12 lines x 50 cm 11 lines x 55 cm 10 lines x 60 cm 9 lines x 65 cm 9 lines x 70 cm 8 lines x 75 cm 8 lines x 80 cm 7 lines x 90 cm	*15 lines x 40 cm *14 lines x 45 cm *13 lines x 50 cm 12 lines x 55 cm 11 lines x 60 cm 10 lines x 65 cm 10 lines x 70 cm 9 lines x 75 cm 8 lines x 80 cm 8 lines x 85 cm 7 lines x 90 cm	*16 lines x 40 cm *15 lines x 45 cm 14 lines x 50 cm 13 lines x 50 cm 12 lines x 55 cm 11 lines x 60 cm 10 lines x 65 cm 9 lines x 75 cm 9 lines x 80 cm 8 lines x 85 cm 8 lines x 90 cm	*18 lines x 40 cm *17 lines x 45 cm 16 lines x 50 cm 15 lines x 50 cm 14 lines x 55 cm 13 lines x 60 cm 12 lines x 65 cm 11 lines x 70 cm 10 lines x 80 cm 9 lines x 85 cm 9 lines x 90 cm
(2) Working width	5.4 m	5.85 m	6.3 m	7.2 m
(3) Standard implement power requirements	169 hp (spaced shanks) 130 hp (dual cutting discs)	182 hp (spaced shanks) 140 hp (dual cutting discs)	195 hp (spaced shanks) 150 hp (dual cutting discs)	221 hp (spaced shanks) 170 hp (dual cutting discs)
Tires	4 tires, 750 x 16” (12 ply) 90 PSI	4 tires, 750 x 16” (12 ply) 90 PSI	4 tires, 750 x 16” (12 ply) 90 PSI	4 tires, 750 x 16” (12 ply) 90 PSI
(4) Seed capacity	60 liters ~ 50 kg p/ line	60 liters ~ 50 kg p/ line	60 liters ~ 50 kg p/ line	60 liters ~ 50 kg p/ line
(5) Fertilizer capacity	1973 liters ~ 2230 kg	2196 liters ~ 2460 kg	2239 liters ~ 2530 kg	2566 liters ~ 2900 kg
Job speeds	6 to 8 km/h (soy) 4 to 6 km/h (corn)	6 to 8 km/h (soy) 4 to 6 km/h (corn)	6 to 8 km/h (soy) 4 to 6 km/h (corn)	6 to 8 km/h (soy) 4 to 6 km/h (corn)

Table 2

(1) Main spacing options are only used for theoretical information purposes.

(2) Working width is the distance between the first and the last planting line.

(3) Power requirements for pulling a planter can vary for the same planter based on certain factors such as soil type, job depth, soil compaction, ground moisture, type of forage/stubble and planting speeds.

(4) Seed capacity is for theoretical purposes only and is specified in liters, or approximate values in kilograms.

(5) Fertilizer capacity is for theoretical purposes only and is specified in liters, or approximate values in kilograms.

* Lines on wheel/axle assembly always spaced at 47 cm.

* Available only on chain driven transmission systems.

MODEL	3600	4050	4500	4950	5400	5850	6300	7200
Dimension “A” total width (m)	5.53	5.91	6.37	6.87	7.35	7.7	8.16	9.15
Dimension “B” total width (m)	3.6	4.0	4.5	4.9	5.4	5.8	6.3	7.2
Dimension “C” total length (m) with row flex line	5.77	5.77	5.77	5.77	5.77	5.77	5.77	5.77
Dimension “D” (m) total length (m) with row flex line	3.48	3.48	3.48	3.48	3.48	3.48	3.48	3.48
Dimension “E”(m) with row flex line	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95
Dimension “F” (m)	2.26	2.26	2.26	2.26	2.26	2.26	2.26	2.26
Dimension “G” (m)	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14

Table 3

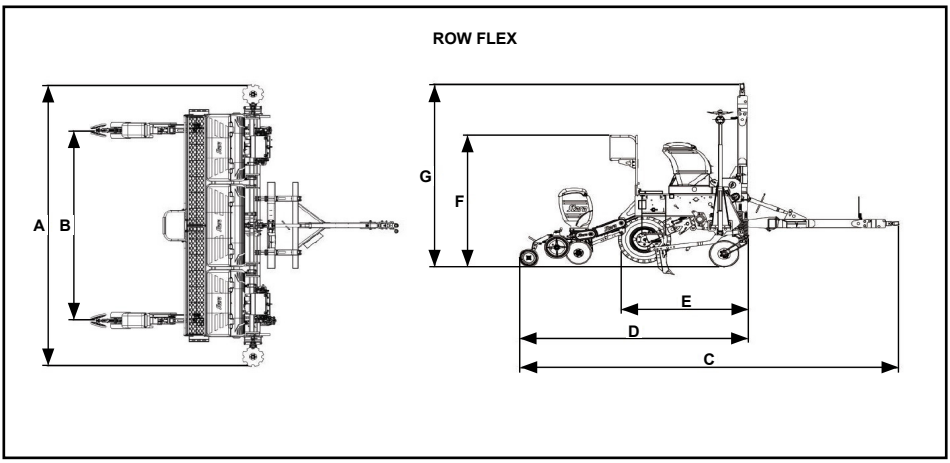

Figure 3

4 - SAFETY PROCEDURES

Figure 4

The following items will explain the importance for operator safety, also clarifying common risk situations during normal use and implement maintenance, suggesting possible corrective actions during these situations.

Precautionary measures are necessary in light of the equipment being used and working conditions found in the field, or in maintenance areas. The manufacturer has no direct control regarding these precautionary measures, thus it becomes the responsibility of the owner to enforce these safety procedures while working with the implement.

This implement follows design and work related SAFETY STANDARDS FOR MACHINERY EQUIPMENT CONSTRUCTION per NR-12.

Changing the original design of the implement is prohibited, since any alterations could affect the operation of the implement, its safety and could reduce its life expectancy.

Should you not fully understand any part of this manual and need technical assistance, please contact your local Stara dealership.

Carefully read all safety related messages and warnings in your manual (Figure 4).

IMPORTANT!
Maintain this instruction manual in good condition and do not forget to consult it on a regular basis.

4.1 - General safety procedures

- When inspecting, refueling or refilling other materials, all should be done with the implement turned-off and parked, using all safe means of accessibility.
- It is prohibited the transport of passengers on self-propelled machines and implements.
- When servicing or inspecting the implement in high risk areas, these should only be done by trained or skilled workers, observing all safety procedure.

4.2 - Understanding safety information

Figure 5

This symbol is used as a warning sign (danger, warning and caution). When you see this sign on your implement, be aware of possible hazards (Figure 5).

Follow all recommended safety measures and operational safety practices, understanding the importance for your safety.

- Accidents can cripple you, even cause death.
- Accidents can be prevented.

4.3 - Decal care

- Do not remove or disfigure safety or job instruction decals.
- Maintain safety decals in good condition
- Replace any damaged or missing decals.
- Replacement safety decals can be found at your local Stara dealership.

4.4 - Intended use

- This implement was specifically designed to be used for planting.
- This implement should only be driven and operated by a trained operator.

4.5 - Improper use and operation

- Hitching-up, hooking-up or pushing other implements or accessories is prohibited.
- It is prohibited to ride on the implement during planting operations, and Stara will not be held responsible for accidents caused by operator negligence.

Figure 6

- To avoid the risk of injuries or death, do not transport passengers or objects on the catwalk or on any part of the implement (Figure 6).
- The implement should only be used by qualified operators who knows all controls and operation techniques.

WARNING!
Any improper use of the implement, specially on irregular terrain or hilly terrain could cause overturning of the implement. Be extremely cautious during rain, snow, icing or any slippery terrain.

WARNING!
Never exit the machine while it is in motion, even if it is overturning, or suffer the possibility of being crushed.

4.6 - Preventing unexpected machine start-up

- Protect yourself against possible injuries and even death, due to an unexpected machine start-up.
- Do not start the tractor if the implement is not properly hitched.

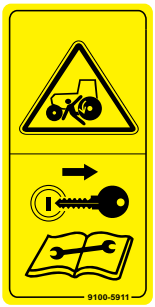

Figure 7

4.7 - Precautions to work in safety

When performing certain procedures with the implement, use the required safety equipment as listed below (Figure 9).

- Waterproof gloves;
- Overalls;
- Safety glasses;
- Hard hat;
- Waterproof steel toe safety shoes;
- Hearing protection;
- Safety breathing mask with appropriate filter.

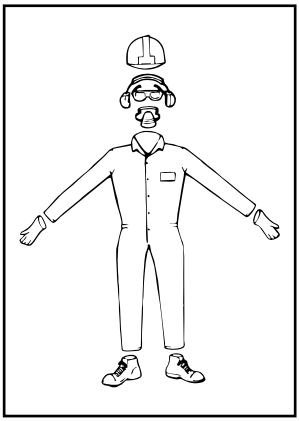

Figure 8

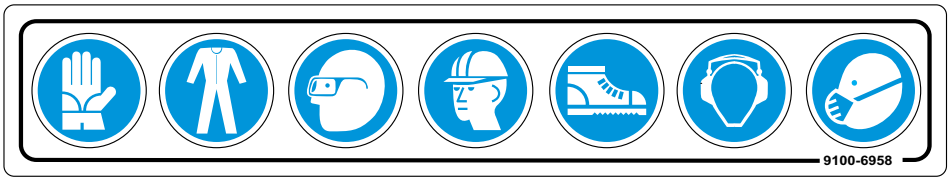

Figure 9

4.8 - Operating the implement with safety

- Learn how to properly operate the implement.
- Do not allow untrained persons to operate the implement.
- Periodically inspect all safety equipment on the implement before using it.
- Operate the implement only when all safety shields are properly installed and in their proper

positions.

- Maintain the area of movement free while the implement is in operation (Figure 10).
- Should you need to use the row markers, verify that there are no persons, animals or nearby obstacles (Figure 11).
- Stay clear of mechanical moving parts like belts gears, chains and drive-shafts (Figure 12) (Figure 13).
- Before operating the implement, check for any persons or nearby obstructions (Figure 14).
- When using the jack or support stand, be careful of possible accident hazards (Figure 15).
- When climbing on the implement, use the anti-skid steps on the ladder. Keep all steps, hand-rails and catwalks free of residues like oil or grease, which could cause accidents (Figure 16).
- When hitching-up the implement to the tractor's drawbar, remember to install the locking pin on the coupling pin. The removal of the lock-down bolt will result in the forfeiture of the warranty.

Figure 10

PERIGO / PELIGRO / DANGER / ОПАСНОСТЬ
ANTES DE ACIONAR A PLANTADEIRA, OBSERVE SE NÃO HÁ PESSOAS, ANIMAIS OU OBSTÁCULOS NA ÁREA DE AÇÃO DOS MARCADORES DE LINHA, OU EMBAIXO DA PLANTADEIRA.
ANTES DE ACCIONAR LA PLANTADORA OBSERVE SI NO HAY PERSONAS, ANIMALES O OBSTÁCULOS EN EL ÁREA DE ACCIÓN DE LOS MARCADORES DE LÍNEA, O DEBAJO DE LA PLANTADORA.
BEFORE OPERATING THE PLANTER, VERIFY THAT THERE ARE NO PERSONNEL, ANIMALS OR OBSTACLES AROUND THE ROW MARKERS WORKING PARAMETERS, OR UNDER THE PLANTER.
ПЕРЕД НАЧАЛОМ РАБОТЫ СЕЯЛКИ УБЕДИТЕСЬ В ОТСУТСТВИИ ЛЮДЕЙ, ЖИВОТНЫХ И ПРЕПЯТСТВИЙ В ЗОНЕ ДЕЙСТВИЯ СЕЯЛКИ ИЛИ ПОД НЕЙ.
9100-6361
Figure 11

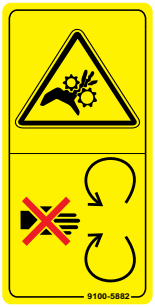

Figure 12

Figure 13

Figure 14

Figure 15

Figure 16

- Thoroughly inspect the job area before any operations. Check for any obstacles near the implement like trees, walls and high power lines, posing as hazards which could in the end cause severe or fatal injuries (Figure 17).
- Check the implement for proper working conditions. In case of any irregularities which may hamper the operations, order the proper maintenance corrections prior to the operating or transporting.

PERIGO / PELIGRO / DANGER / ОПАСНОСТЬ
NÃO SE APROXIME DE LINHAS DE TRANSMISSÃO OU CABOS ENERGIZADOS. O CHOQUE ELÉTRICO PODE OCORRER COM OU SEM CONTATO DIRETO.
NO SE ACERQUE DE LÍNEAS DE TRANSMISIÓN O CABLES ENERGIZADOS. EL CHOQUE ELÉCTRICO PUEDE OCURRIR CON O SIN CONTACTO DIRECTO.
STAY CLEAR OF TRANSMISSION LINES OR POWER LINES, ELECTRIC SHOCK MAY OCCUR WITH OR WITHOUT DIRECT CONTACT.
НЕ ПРИБЛИЖАЙТЕСЬ К ЛИНИЯМ ПЕРЕДАЧ ИЛИ ЭЛЕКТРИЧЕСКИМ ПРОВОДАМ. ПОРАЖЕНИЕ ЭЛЕКТРИЧЕСКИМ ТОКОМ МОЖЕТ ПРОИЗОЙТИ ПРИ НЕПОСРЕДСТВЕННОМ КОНТАКТЕ ИЛИ БЕЗ НЕГО.
9100-6956
Figure 17

- Do not operate under the influence of alcohol, tranquilizers or stimulants.
- Do not operate near obstacles, rivers or streams.

- Drive with caution and slowly while on rugged and hilly terrain.
- Reduce speed on wet or frozen surfaces or surfaces covered with gravel
- Reduce speed on curves.

4.9 - Safety measures while transporting the implement

4.9.1 - Transporting on public roadways or highways

- Driving with the implement on public roadways or highways is prohibited.
- Know and respect all transit laws.
- Operate with safety when transporting the implement.
- Do not obstruct the traffic.

4.9.2 - Transporting the implement on trucks or flatbeds

- The implement will be partially disassembled.
- Properly position the implement so that none of its parts stick outside the flatbed area.
- Use chains to tie-down the implement to the flatbed by its tires with blocks, applying the implement's own brakes.
- The implement shall be secured to the bed of the truck with hold-down straps secured to the chassis of the implement.
- Apply the parking brake.
- Be aware of the implement's height limitations. Be careful while traveling near trees, high power lines and overpasses.

4.9.3 - Lights and safety devices

Directives for the tractor operator:

- Frequently check rear view mirrors.
- Always use your turn-signals to indicate your turning direction.
- The safety beacon should be located on top of the cabin and turned-on.
- Use driving lights, warning signals and turn-signals when driving, day or night.
- Besides the safety features discussed here, the precautions and concerns of a trained operator,

all these contribute to the safety of those who are near the implement.

4.10 - Work in well ventilated areas

Never operate the implement in confined areas. Work should be done in open and ventilated areas due to exhaust fumes, chemicals and fertilizers, which if inhaled can lead to asphyxiation.

Figure 18

4.11 - Avoid fluids under high pressure

- High pressure fluid leaks can penetrate the skin, which could cause severe injuries.
- Avoid such hazards by relieving the pressure prior to disconnecting the hydraulic lines or other lines. Tighten all connections prior to pressuring-up the system.
- Protect yourself against high pressure fluids.
- In case of an accident, seek immediate medical attention. Any fluid that penetrates the skin needs to be surgically removed within a few hours so that gangrene will not set in.

Figure 19

- Do not loosen hydraulic hoses while under pressure. Take great care when servicing the hydraulic system and use your personal safety equipment like, gloves and safety glasses.
- Only the qualified technicians can fix this type of system. Consult with your local Stara dealership.

4.12 - Avoid heating parts near fluid lines

The heat may cause the material to become brittle and to rupture, releasing pressurized fluid. This may cause severe burns or injuries.

Figure 20

4.13 - Cautions while on hilly terrain

- Avoid holes, ditches and obstacles which could overturn the implement, specially on steep hills.
- Avoid tight curves on sloped or hilly terrain.
- Never operate the implement near ditches or rivers, which could be prone to overturning.
- Avoid operating the implement on steep hills, which can cause irregular row plowing, besides overturning risks.

Figure 21

4.14 - Emergency procedures

- Be ready for any type of fire.
- In case of a fire, or any other hazardous situation detrimental to the operator, he should seek shelter in a secure place as quickly as possible.
- Keep all emergency phone numbers like doctors, ambulance services, hospitals and fire department near your phone.

4.15 - Safety procedures when inflating tires

- Never try to refill a tire which is completely flat. If the tire has lost complete pressure, contact the nearest tire specialist.
- Always try to use a protective cage or safety shield when trying to fill a tire.

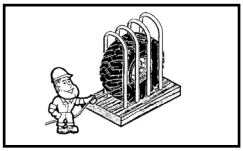
Figure 22

- In case of a punctured tire, deflate it to remove the object responsible for the puncture. The work to dismount and remount the tire should be done solely by a qualified professional.
- Any changes to the rim balancing can cause the tire to explode. For that reason, dismount the tire before making any repairs to the rim.

Instructions when inflating a tire:

- Use an appropriate air hose, long enough to reach work area, having an air gun with a dual valve and an incremental metering scale with which to measure and see the pressure reading.
- Place yourself behind the specified safety line, along with any other personnel before beginning to inflate the tire.
- Never inflate the tire to pressures higher then specified.

4.16 - Safety measures during implement maintenance

Before servicing the implement consult the manual instructions of section 5 on page 24 (Figure 23).

Figure 23

- In order for someone to operate your implement and equipment, the operator should be capable, properly trained and must have read the instructions contained in this manual.
- Always maintain the implement in good working conditions, performing all required maintenances as defined by the type and frequency of implement operation, and also the types of products involved.
- Check for any signs of ware and tare, noises and any places where there is a lack of lubrication. In case of a break-down or component failure, seek your dealership in order to replace the part with an original one.
- It is recommended that all maintenance services be performed by trained and capable professionals, having all implement mechanical devices turned-off.
- Use transport cylinder lock-out blocks when servicing under the planter (Figure 24).

PERIGO / PELIGRO / DANGER / ОПАСНОСТЬ
UTILIZE OS CALÇOS DE TRANSPORTE NO CILINDRO,ANTES DE EFETUAR AJUSTES OU MANUTENÇÕES EMBAIXO DA PLANTADEIRA.
UTILICE LAS CUÑAS DE TRANSPORTE EN EL CILINDRO, ANTES DE EFECTUAR AJUSTES O MANTENIMIENTOS DEBAJO DE LA SEMBRADORA.
INSTALL TRANSPORT LOCK-OUTS ON CYLINDERS, BEFORE PERFORMING ADJUSTMENTS OR MAINTENANCE UNDER THE PLANTER.
УСТАНОВИТЕ ТРАНСПОРТНЫЕ ЗАМКИ НА ЦИЛИНДРЫ, ПЕРЕД ВЫПОЛНЕНИЕМ РЕГУЛИРОВОК ИЛИ ТЕХНИЧЕСКИМ ОБСЛУЖИВАНИЕМ ПОД СЕЯЛКОЙ.
9100-5715
Figure 24

- Securely support any parts of the machine which need to be lifted in order to perform maintenance (Figure 25).
- Maintain all components like, hoses, connections and clamps in good working conditions, in order to prevent leaks.
- Maintain the work area clean and dry. While performing any maintenance on the implement, immediately clean-up any oil spill.
- Do not smoke, nor install any electrical equipment near flammable products, be it on the implement or storage areas.

Figure 25

- Failure to perform proper maintenance and or the improper operation of the implement by untrained personnel, can cause serious accidents and injuries, besides damaging the implement.
- When welding on any part of the implement, remove and isolate the battery cables, thus avoiding damages to the battery or other safety hazards.
- After using the implement wash it, thus extending its useful life.

NOTE!
Be on the look-out for grease fittings. After the final cleaning has been done, lubricate the implement components before storing it.

- Before starting any maintenance and adjustment procedures, lower the implement to the ground, turn-off all power sources (electric, hydraulic), the engine and operate controls to relieve any pressure in the hydraulic system.

- Should you have an questions, seek technical assistance when performing any servicing or maintenance.

4.17 - Clean water tank

Supplies a clean water source for field wash-down in case of an emergency when dealing with chemical products.

This water is not safe for human consumption (Figure 26).

Should you come into contact with chemicals, wash-up and seek immediate medical assistance.

Figure 26

4.18 - Topper job/maintenance safety measures

Recommended safety instructions when working with the Topper Controller:

- Read the instruction manual before using the Topper Controller. Should you have any questions regarding any items at all, contact the Stara after-market sales department to clear-up your questions.
- Calibrate the sensor pulses by 100 m after changing a tire or wheel assembly.
- Always maintain the self-propelled electrical system good working condition, thus avoiding any possible battery voltage variations, short-circuits and poor connections.
- Never start the self-propelled unit with the Topper Controller turned-on, due to the fact that the current variations caused by the start-up could damage the equipment.

4.19 - Protecting the environment

It is illegal to pollute channels, rivers or the soil. Improper waste disposal is a threat to the environment and the ecology.

Figure 27

- Use containers to dispose used oils.
- Use leak and spill proof containers, when draining used fluids.
- Do not dump waste on the soil, sewer systems and waterways.

5 - PLANTER PREPARATION

5.1 - Tire calibration

Calibrate tire pressures according to the model type, as directed in the technical specifications section.

IMPORTANT!
See the safe tire inflation procedure in section 4.15 on page 21.

5.2 - Closing wheel installation

IMPORTANT!
Remove the closing wheel assembly from the housing using the appropriate lifting equipment, being relative to the weight of the assembly.

- Line-up holes (A) and (B) and insert pin (C).
- Install bushing (D) on pin (C) and lock-it in with the cotter pin (E).

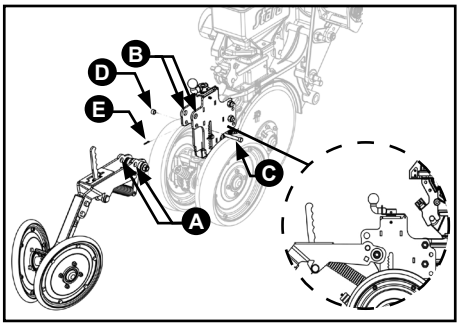

Figure 28

5.3 - Implement hitch installation

The hitch can be raised for transport and storage. To lower it, remove the lock-pin (A), and mount it on position (B). Adjust the hitch height to the height of tractor draw-bar by repositioning pin (C) on the draw-bar adjustment housing (Figure 29). The planter uses a Class 3 bushing on the tractor draw-bar hitch.

On smaller tractors the bushing may need to be changed, to do so follow this procedure (Figure 30). Remove the lock-ring (A), remove the bushing (B) and replace it with the appropriately sized bushing (C) and reinstall the lock-ring (A).

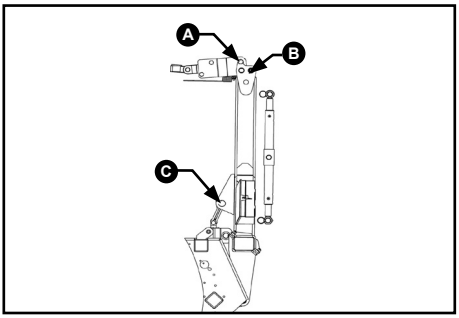

Figure 29

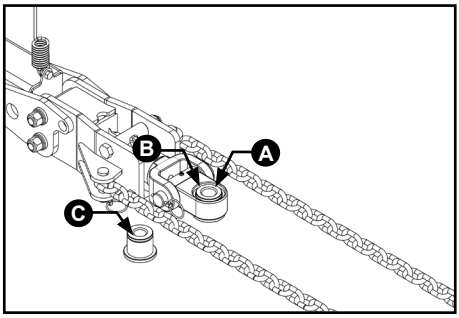

Figure 30

5.4 - Implement hitch-up

Using the tension rod adjustment (A), raise or lower the hitch until it lines-up with tractor's tow bar. Drive in reverse and place the locking pin in the bushing (B).

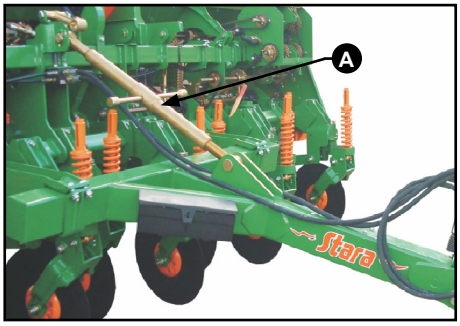

Figure 31

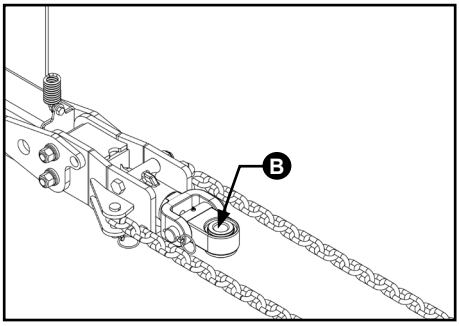

Figure 32

5.4.1 - Hydraulic hook-up

Verify that the quick-disconnects are free of impurities before hooking-up the hoses to the tractor. When the quick-disconnects are not in use, seal them using the attached protective caps.

ATTENTION!
Do not hook-up to the tractor's hydraulic system, or other hydraulic systems which may contain impurities in its circuit, or you might contaminate the tractor's hydraulic system, along with its components.

Hook-up the planter's hydraulic system hoses to the tractor using the quick-disconnects (Figure 33), properly pressing and making the terminal connection, thus avoiding leaks. Secure the hoses to the hydraulic cylinder and the hold-down clamps. Make sure that the terminals are clean and do not touch the ground. Raise the machine using its hydraulic cylinder, and retract the support stands (A) securing them in-place with the lock-pins (B).

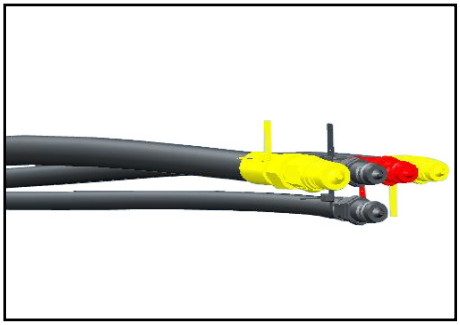
Figure 33

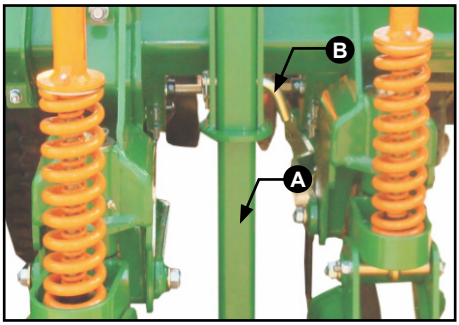

Figure 34

5.4.2 - Electrical hook-ups

These connections are found on the hitch side of the implement. Connect and disconnect these electrical connections to the tractor connections when hitching-up or unhitching the implement (Figure 35).

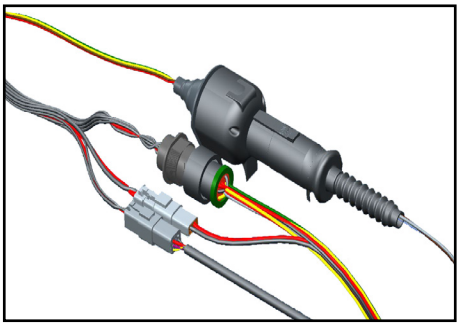

Figure 35

5.5 - Implement unhitching

Lower the machine's support stands (A) to the desired height and lock them in-place with the locking pins (B) (Figure 36).

Lock the hydraulic cylinder using the lock-out blocks (C). Turn-off the tractor and relive the hydraulic pressure. Unhook the quick-disconnect hoses and seal the connections with the protection caps. Remove the engagement pin and move the tractor forward. To store the planter, lift the hitch bar, thus reducing the storage space (Figure 37).

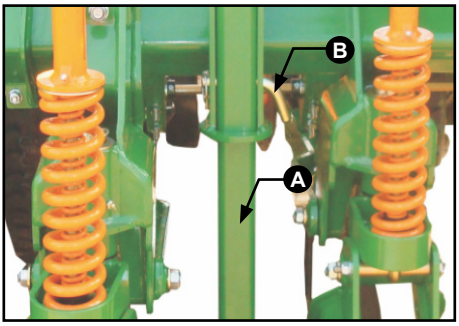

Figure 36

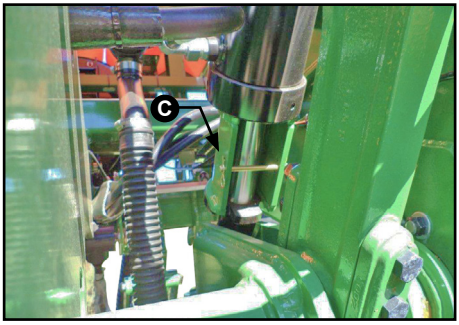

Figure 37

5.6 - Seed line spring tension adjustments

The springs that determine the ground planting line tensions are preset to three (3) settings. Before planting, check for the required spring adjustment setting (A), which is according to the soil type, in order to obtain for the desired seed disk penetration. If there is a need for an adjustment, turn the nut (B) clockwise to increase the tension and counterclockwise to decrease the tension.

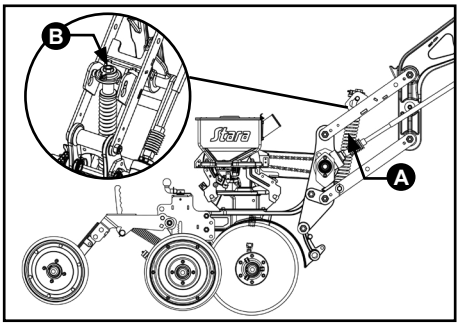

Figure 38

IMPORTANT!
Check the depth gauge wheels calibrations as follows below.

5.7 - Adjusting the depth gauge wheels

Planting depth is one of the key factors that most interferes with germination and plant emergence.

Seed depth control is done individually through the depth gauge wheels (A).

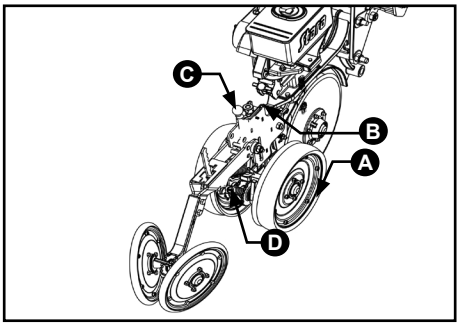

Figure 39

IMPORTANT!
Excessive tension can damage the gauge wheels and cause the planter to float.

Follow this procedure in order to adjust for the seeding depth.

- Raise the implement to remove the weight on the gauge wheels;
- Release the brake (B);
- Turn the knob (C) counter-clockwise to increase the tension on the gauge wheels, resulting in a shallower seed population, relative to the ground surface;
- Turn the knob (C) clockwise to decrease the tension on the gauge wheels, resulting in a deeper seed population, relative to the ground surface.

To prevent the gauge wheels from clogging-up when planting on moist soil or with heavy straw forage, it is necessary to adjust the working angle of gauge wheels. To make the adjustment, follow this procedure:

- Lower the knob (D) to the lower positions for a larger frontal aperture of the gauge wheels;
- Raise the knob (D) to the upper positions for a larger rear aperture of the gauge wheels.

NOTE!
Try to adjust the closing wheel angle according to the seed disks.

5.8 - Adjusting the closing wheels

5.8.1 - "V" closing wheels

The "V" closing wheels press the soil laterally and can work in various positions, depending on the soil type and forage condition.

- Adjust the closing wheel soil tension through the knob (A).
- The further back the selection (towards the gauge wheels), the greater will be the tension of the gauge wheels on the soil.
- Use knob (B) to adjust the tilt angle between the wheels.

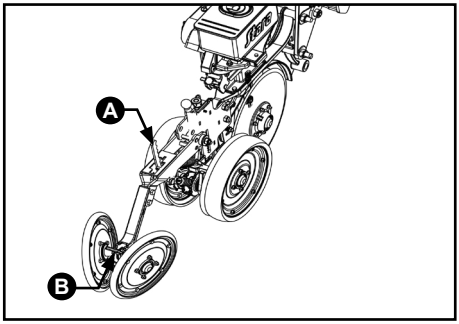

Figure 40

- Move the knob (B) to the upper positions for a wider frontal wheel apertures.
- Move the knob (B) to the lower positions for greater frontal closure of the closing wheels.

NOTE!
When adjusting the closing wheels, it is important to consider the type of soil, seed and planting depth, so as not to hamper the freedom of the emerging plants.

5.8.2 - Planer closing wheel

The planer closing wheel presses the soil on the center of the cut furrow, being able to work in various positions according to the type o soil and forage conditions.

Make the appropriate adjustments of the swivel joint and the closing pressures using lever (A).

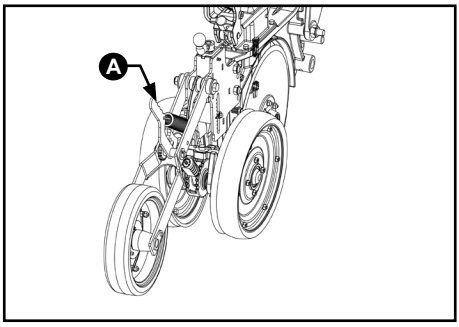

Figure 41

NOTE!
When adjusting the closing wheels, it is important to consider the type of soil, seed and planting depth, so as not to hamper the freedom of the emerging plants.

5.9 - Cutting disk down-force spring adjustment

The cutting disks have a lateral oscillating movement in order to follow the contours of the land. The vertical oscillation (or floating) of the disks is directed by the down-force springs (A), which need to maintain their tensions adjusted according to their cutting needs and allowing for the appropriate joint movement when following the land contour and when passing over obstacles.

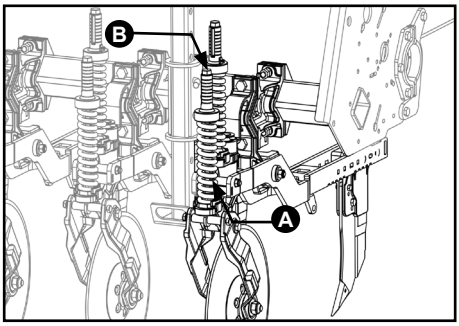

Figure 42

To adjust the down-force spring pressure turn the adjustment nut (B) clock-wise to increase the pressure and counter clock-wise to decrease the pressure. Do this to all lines.

IMPORTANT!
During the job avoid making sharp turns or the line components may be damaged in the process.

NOTE!
Avoid excessive cutting disc penetration. The ideal depth is when the cutting disc flange does not make contact with the soil.

5.10 - Fertilizer down-pressure spring adjustment

Fertilization is done on the same row and below the seeds (for both no-till and conventional systems). To adjust the spring pressure (B) on the fertilizer lines (A), turn nut (C) clock-wise to increase the pressure and counter clock-wise to decrease the tension.

NOTE!
Make these adjustments to all lines.

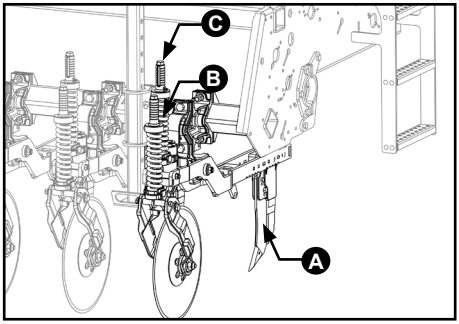

Figure 43

The furrow opening for fertilizer placement, can be done through staggered dual discs or tiller shanks.

NOTE!
See fertilizer furrowing shanks on section 9, page section 9 on page 45.

When planting on soil with heavy hay forage, increase the in-line spacing by mounting the furrowing shanks or dual disks more forward or further back on the adjustment screws of the mounting bar (D).

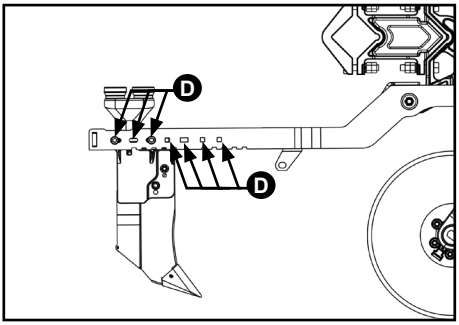

Figure 44

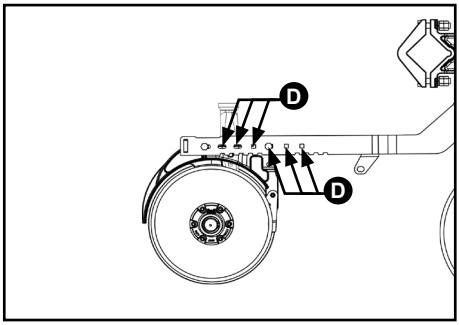

Figure 45

5.10.1 - Dual Discs

Staggered or offset dual discs have internal cleaners (A) which are flexible and adjustable, and are used to remove internal dirt built-up.

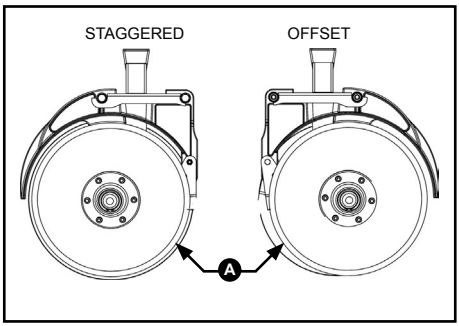

Figure 46

5.10.2 - Tiller shanks

There are two type os tiller shanks: conventional (A), and with auto-release (B) .

When using the conventional shank, verify the depth adjustment and the angle of approach using the screws (C).

When using auto-release shanks, periodically check the conditions of the screws (D).

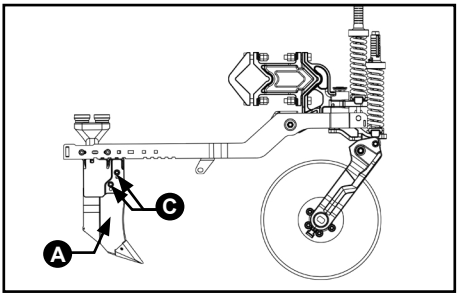

Figure 47

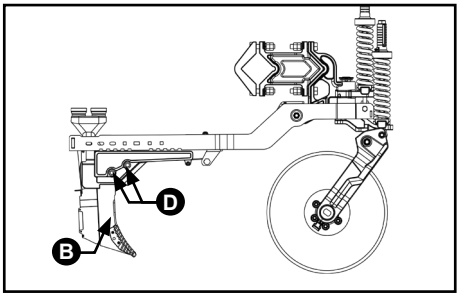

Figure 48

NOTE!
For additional information regarding the auto-release shanks see the Auto-release Furrow Assembly on section 11 on page 46.

5.11 - Planter leveling

Using the extension arm (A) level the implement. This procedure should be done with the implement in its working position. It is of fundamental importance that the implement be properly levelled, so that there are no disproportional cutting depths between the front and rear lines.

Position the extension arm (A) to match the holes on the hitch, selecting the proper position in order to level the implement.

NOTE!
It is recommended to operate the draw-bar (C) being levelled relative to the ground, and being able to adjust to the soil penetration needs.

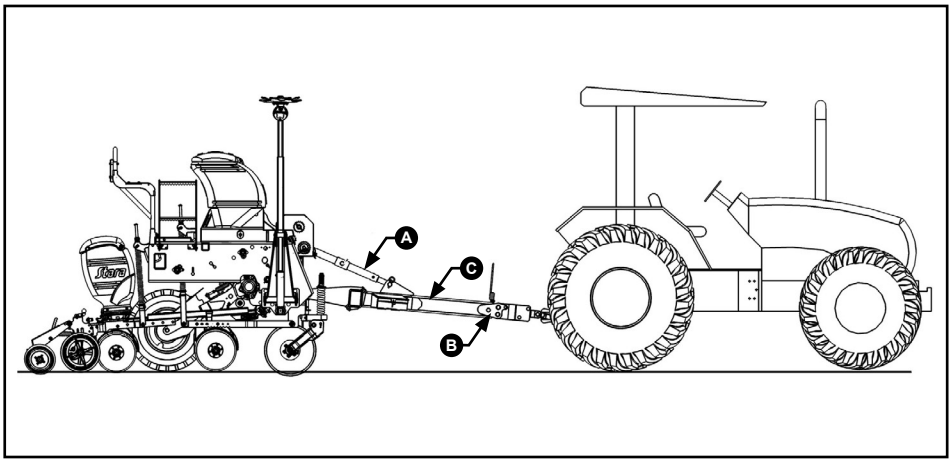

Figure 49

NOTE!
When planting with large grains and on highly compacted terrain, you can achieve greater cutting capacity with the fertilizer tiller shanks by slightly lowering the front of the implement, being careful not to over do it, so as not to change the angle of the ripper shank's penetration point

NOTE!
On soft or hilly terrain, where the implement is tilling unevenly or more then needed, you can change the cutting capabilities by decreasing the down-force spring tension or by adding lock-out blocks on each hydraulic cylinder of the implement (the blocks are in the spares box). Should you chose to add blocks to the cylinders, the implement will need to re-leveled.

5.12 - Drive wheel spring adjustment

The implement wheels have free movement so as to follow the contours of the terrain. The wheel tensions against the ground is done through springs (A), nuts and locknuts.

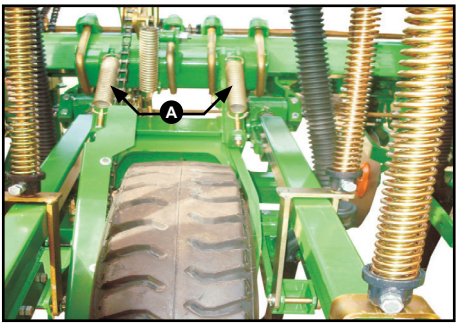

Figure 50

NOTE!
Always use the same pressures on the tires. Never plant with tires of different patterns or widths.

5.13 - Row marker adjustments

The use of row markers is very important, through their use you will achieve uniform planting lines, which will facilitate in field treatments and harvesting.

To adjust the line markers, simply loosen the screws (A), and move the extender (B) to the desired position.

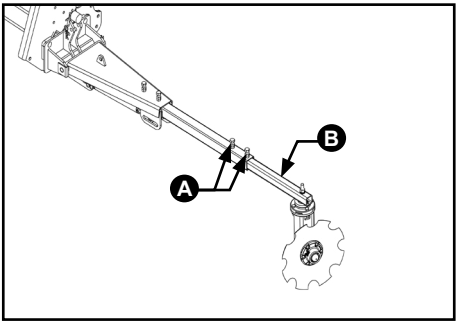

Figure 51

ATTENTION!
For proper adjustments it is necessary to keep front and rear wheels with the same spacing, or be it with the same front wheel center to center spacing as the rear wheels.

This position can be obtained in the following manner (Figure 52):

- Walk with the planter for a few meters.
- Measure the distance (D) between the center track of the tractor and the center of the first seeding line (the furthest line on the implement).
- Add this measurement with the between row spacing (B) being used on the implement.

The result is distance (C), which should be between the line maker disc and the center of the first seeding line (the furthest line on the implement).

Example:

A - From the tractor`s center track to the center of the first seeding line= 800 mm.

B - Spacing between planting lines = 450 mm.

C - Distance to be found (?).

Thus: A + B = C

800 + 450 = 1250 mm

C = 1250 mm

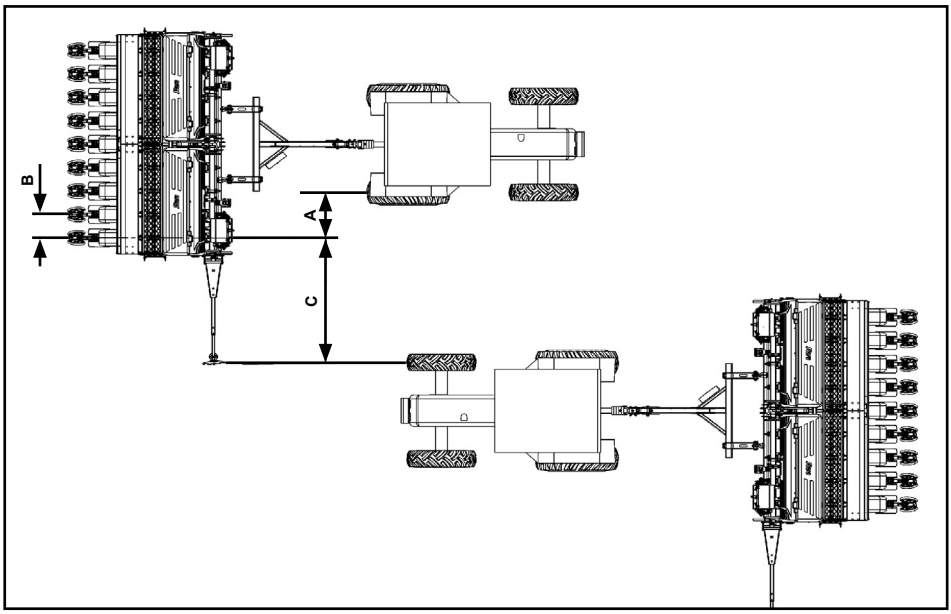

Figure 52

5.14 - Job angle

The marking disc (A) has an angle adjustment (B), to facilitate your work when opening the soil (demarcation), to do so simply loosen the nut and adjust as necessary.

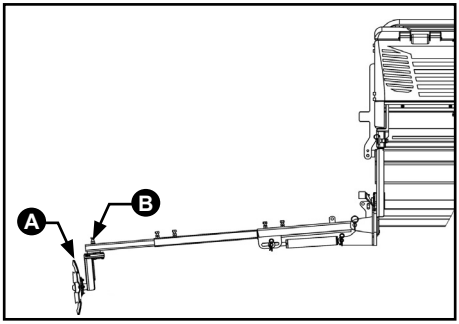

Figure 53

5.15 - Seed hopper gate release

Open the gate release (A) below the seed hoppers in order to fill the tubes before planting.

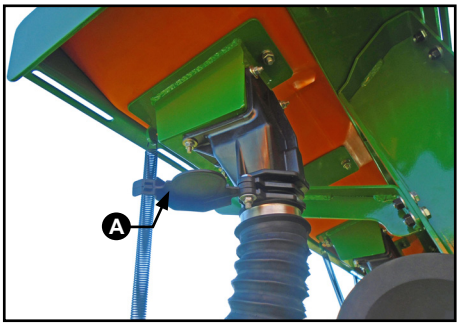

Figure 54

5.16 - Vacuum adjustment

Adjust the tractor's PTO rotation to 540 rpm.

Adjust the motor oil flow-rate and job pressure using knob (A). Increasing the rates, will increase the motor rpm which drives the turbine, which in-turn raises the vacuum pressures.

Verify the pressure on the manometer (B).

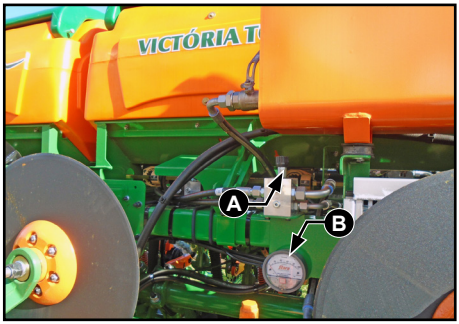

Figure 55

The table below gives you initial settings, after making these adjustments walk with the planter and check the planting monitor for the seed population. If necessary, make adjustments as needed by raising or lowering the vacuum, based on the fact that, seeds are being properly suctioned or not onto the seeding feeder disk holes.

CROP	APPROXIMATE PRESSURE (m bar)
Soy	40
Corn	40 - 50
Cotton	40
Beans	40 - 45
Sunflower seeds	27 - 32
Sorghum	27 - 32

Table 4

5.16.1 - Discs by commodity

The DPS plants seeds of any type or size, needing no adjustments, using only one disc per commodity.

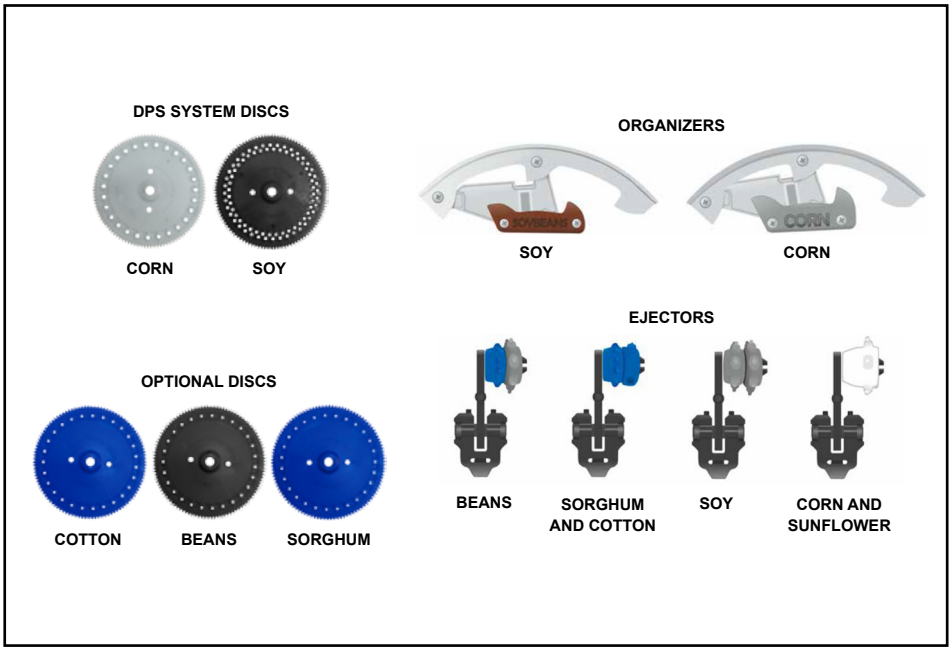

Figure 56

CROP	DISC	ORGANIZER	EJECTOR
Soy	Soy, 80 holes Ø 3.5 mm, Part No. 6427-4117	Soy, Part No. 6427-4119-OR	Soy, Part No. 6427-4119-EXP
Corn	Corn, 27 holes Ø 4.5 mm, Part No. 6427-4118-DSM	Corn, Part No. 6427-4118-OR	Corn, Part No. 6427-4118-EXP
Cotton	Cotton, 27 holes Ø 3 mm, Part No. 6427-4120	Corn, Part No. 6427-4118-OR	Cotton, Part No. 6427-4121
Beans	Beans, 40 holes Ø 4 mm, Part No. 6427-4130	Corn, Part No. 6427-4118-OR	Beans, Part No. 6427-4130-EXP
Sunflower	Corn, 27 holes Ø 4.5 mm, Part No. 6427-4118-DSM	Corn, Part No. 6427-4118-OR	Corn, Part No. 6427-4118-EXP
Sorghum	Sorghum, 27 holes Ø 2.5 mm, Part No. 6427-4132	Corn, Part No. 6427-4118-OR	Cotton, Part No. 6427-4121

Table 5

5.17 - Safety lock-out removal

Raise the implement using the hydraulic cylinder and remove the lock-out stop (A) by removing the cotter pin (B) and pin (C).

IMPORTANT!
This lock-out block needs to be used everytime any maintenance is done underneath the planter and/or any of its components.

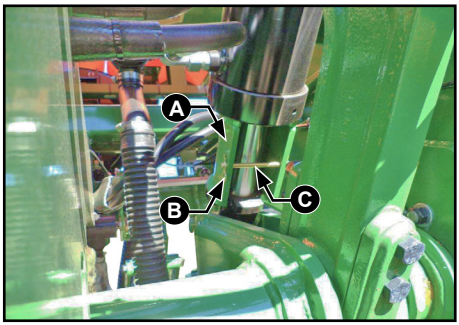

Figure 57

5.18 - Lift cylinder adjustments

Depending on soil depth penetration requirements, install the required lift cylinder lock-out clamps (A) and (B), which are available in the parts kit.

Lockout Clamp A: ¾”

Lockout Clamp B: ½”

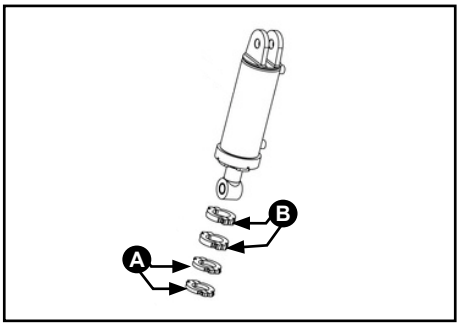

Figure 58

5.19 - Row marker lock-out removal (if installed)

Before planting it is required that the row markers lock-outs are removed.

Remove the cotter-pin (A) and then remove pin (B), releasing the row marker.

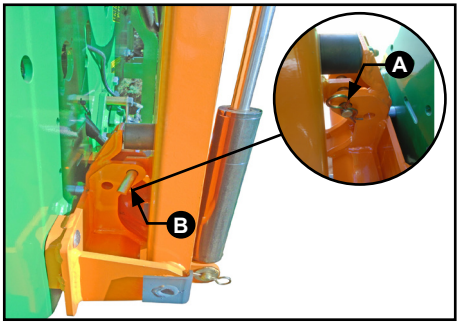

Figure 59

5.20 - Using powdered graphite

IMPORTANT!
Follow all recommended manufacturer's chemical product safety measures when handling treated seeds. Use proper safety protection equipment for eyes, skin and breathing apparatus.

For better performance it is necessary to lubricate the pneumatic meter with graphite. Seeds which have been properly treated with graphite will be released from the seeding discs more consistently, thus producing a better spaced delivery when deposited in the soil.

The powdered graphite application should be done through a tumbling process, before being loaded in the planter hoppers, or some other seed treatment process.

- Place the seeds in a container.
- Apply the powdered graphite according to specified rates.
- Mix the seeds thoroughly, guaranteeing for an uniform adhesion on the seeds.
- Fill the planter seed hoppers.

NOTE!
This procedure prevents graphite buildup in the planter's seed reservoirs, as well as any waste of graphite lubricant powder.

NOTE!
The graphite should be proportionately and thoroughly mixed with the seeds to ensure proper planter system flow and correct dosages.

NOTE!
If a seed treatment handler is used, review the equipment procedures in their Instruction Manual.

The following table indicates an initial setting for determining the required amount of graphite to be applied. Adjust these rates as required so that all the seeds will be coated with graphite, while also preventing any graphite accumulation at the bottom of the reservoir.

Graphite application rate	
Seed reservoir/Planter line	**Graphite quantity/Planter line**
65 L	0.14 L *

*Multiply by the number of lines on your planter.

The required amount of graphite shown on the following table should be added even in cases where the seeds have been treated with insecticides or have already been treated with commercially applied graphite.

Duplicate the recommended graphite dosages when planting small, large, or heavily treated seeds, or when under humid planting conditions. In certain situations, a combination of seed treatments for

sticky seeds under high humidity, you may need to add two to three times the amounts of graphite as shown on the table.

IMPORTANT!
It is necessary to clean any seed treatment and graphite accumulations in the seed hoppers between refills.

If graphite is accumulating at the bottom of the seed reservoirs, and the vacuum collectors require frequent cleaning, reduce the amount of graphite accordingly. If a seed treatment layer is found on the seed disks, increase the amount of graphite.

5.20.1 - Seed treatment application by the grower

When dealing with grower applied treatments, the following recommendations should be followed:

- The powdered graphite lubricant should be applied after the treatment application has been processed, ensuring for the proper adherence of the seed treatment and minimizing any buildup on the meter components;
- Clean the meters and seed discs often, according to your needs;
- Spray graphite on the seed disc vacuum seals;
- Treatments with high oil content are not recommended;
- Seed mixtures and seed treatments should be free of clumping together.

NOTE!
If you have followed the recommendations and are still experiencing treatment accumulation on the metering components, request additional information from the chemical manufacturer being used.

IMPORTANT!
Carefully follow the manufacturer's recommendations for the chemicals used in the seed treatment. The chemical reaction between the seed treatment applied by the farmer and commercially applied treatments can cause seed treatments to become sticky. Certain temperature and humidity levels can further complicate the compatibility of materials.

Some seeds treated with insecticides can have a talc powdered coating, which is done commercially. It is important that the recommended graphite quantities be applied, besides those which have already been applied to the seeds.

Some types of treatments have an oil base which can become sticky, which will adhere to the equipment's parts, which can affect the planting rates.

WARNING!
When using the meter for the first time and at each stage, besides adding graphite to the upper box reservoirs, it is recommended the addition of graphite to each of the row units.

5.20.2 - Caring for the treated seeds

WARNING!
Should the treatment be applied by the actual grower, follow all manufacture's instructions.

We recommend the use of powdered treatments, but liquid treatments can be used, and should be quick-drying types. We do not recommend the use of treatments with high oil content.

WARNING!
We do not recommend mixing treatments, since the chemical reaction between seed treatments cause the seeds to become sticky.

Seeds with high moisture content can further hinder their use. Chemical treatments can adhere to the meter's components reducing seed population and controlled spacing. Consult the product's package or the manufacturer for additional treatment compatibility issues.

5.21 - Topper calibration

NOTE!
Consult the Topper 4500 Controller instruction manual and follow all the required procedures.

6 - MAINTENANCE

In order to make the best use of all the available resources of this precise and rugged implement, certain cares are essential:

- Maintain the gears clean and properly lubricated;
- Apply lubricant to the gears using a brush, covering all the teeth, but avoiding excess;
- Lubricate the chains with oil by dipping or spraying;
- Never place a new link on an used chain;
- Verify that all the chains and gears are properly aligned;
- In periods between harvests, wash the chains with kerosene or diesel oil. Place them in a fine liquid bath of oil and keep it submersed for use in the harvest;
- Lubricate the grease fittings every 10 working hours. Before lubricating them, clean them off using a rag. Should they be defective, replace as needed;
- At the beginning of the harvest, remove the grease caps and check to see the need to lubricate;
- When the planting is done, clean-up the whole planter removing all the dust, debris and dirt which can retain moisture thus causing rust;

- Remove all flex tubes, clean them and store them separately;
- Empty and clean-out the seed reservoirs;
- Paint all chipped and worn parts.

6.1 - Lubrication

To reduce the ware caused by friction between moving parts of the implement, it is essential that proper lubrication be performed, as indicated below:

- Check on the quality of the lubricant, its efficiency and purity, avoiding the use of products contaminated with water or dirt;
- Use grease with a medium consistency;
- Remove the old grease crowns on joints;
- Clean the grease fitting with a rag before applying the lubricant, replacing defective ones;
- Apply the proper amount of new grease;
- Be aware of the lubrication intervals on the different points of the planter;
- Lubricate every 10 working hours.

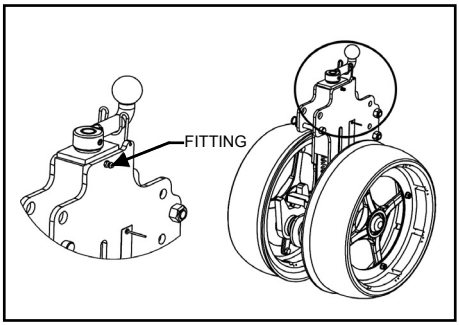

Figure 60

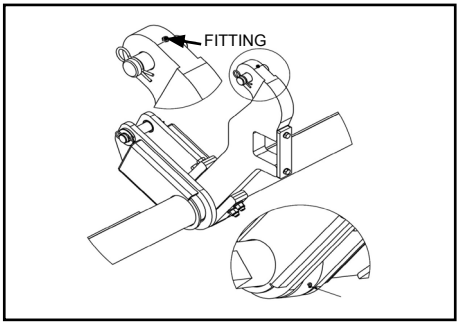

Figure 61

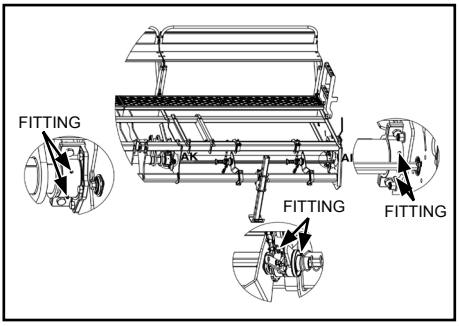

Figure 62

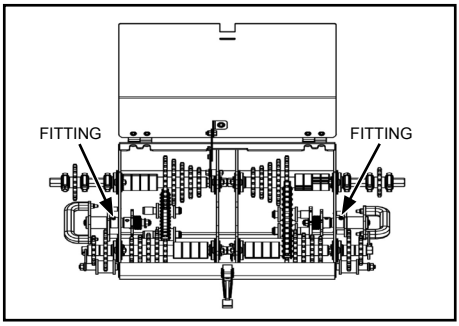

Figure 63

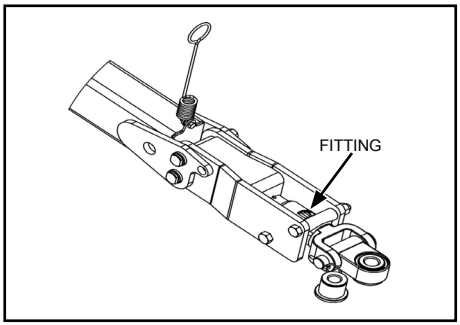

Figure 64

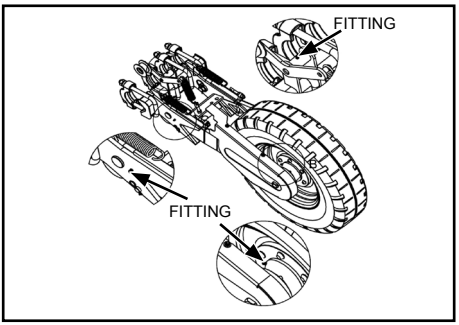

Figure 65

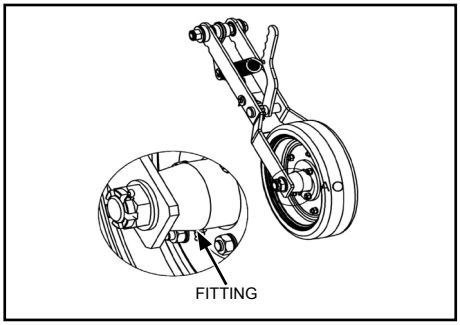

Figure 66

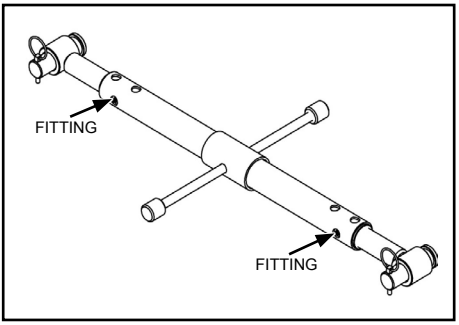

Figure 67

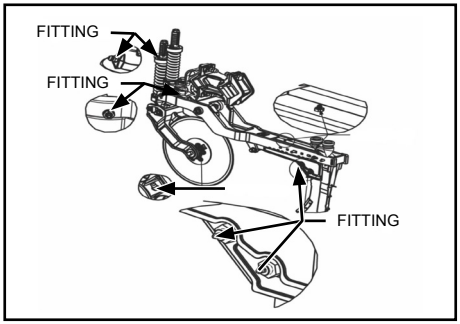

Figure 68

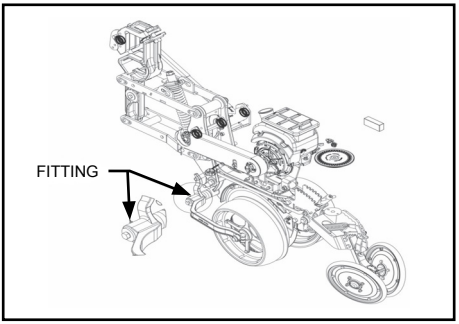

Figure 69

6.2 - Line hub maintenance

At about every 500 hectares planted with the implement, or when there is a noticeable amount of slack, it is necessary to perform maintenance on the cutting disc hubs, dual offset discs, gauge wheels and closing wheels. Disassemble the hubs and remove the internal components.

Clean all parts using diesel oil or kerosene. Check for slack, roller bearing condition, retainers or packing, replacing damaged components or those with excessive wear.

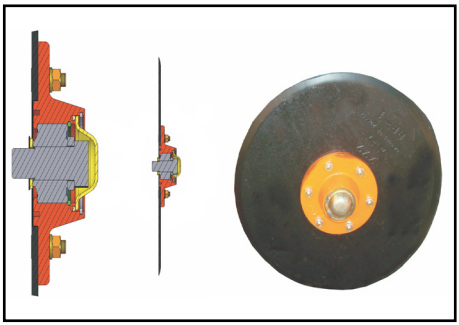

Figure 70

NOTE!
Hubs without grease fittings should be reassembled and repacked with ample amount of good quality lubricant. Hubs with grease fittings should be lubricated until new grease becomes visible.

6.3 - Fertilizer reservoir cleaning

To protect against the corrosive effects of commercial fertilizers, the fertilizer reservoir should be cleaned out at the end of the planting season.

For the best cleaning practices, tilt the reservoir and remove the fertilizer distribution conveyor screw removing all fertilizer deposits or residue.

To tilt the reservoir, remove the “R” clips (A) on the saddle extremities, tilt the saddles forward until it engages on the chassis front tubing slots.

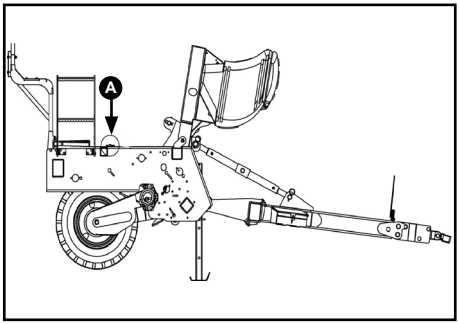

Figure 71

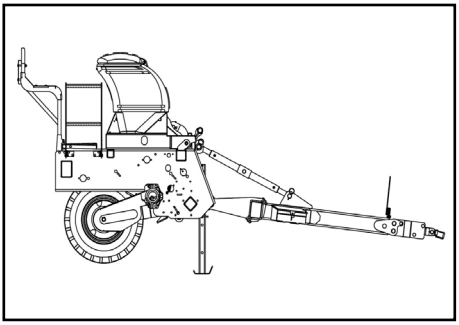

Figure 72

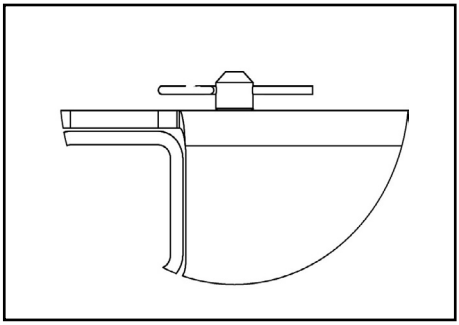

Figure 73

7 - SEED/FERTILIZER DISTRIBUTION

7.1 - Changing line spacing

To change line spacing, lift the implement and lock the cylinder with the transport lockouts. Loosen the nuts (A) and move the lines to the desired spacing, if needed remove or add more lines. Make sure that all mounting hardware has been re-tightened. If necessary adjust the hold-down brackets (B) on the hitch.

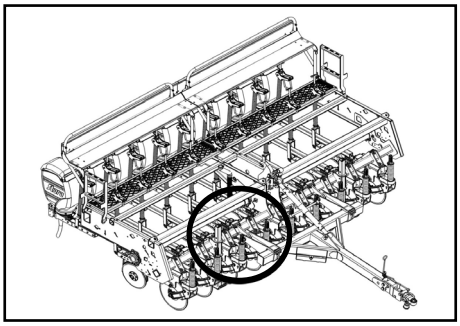

Figure 74

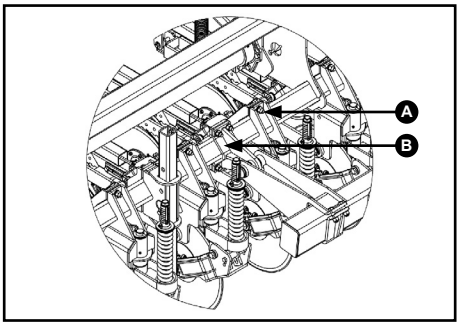

Figure 75

7.2 - Seed and fertilizer distribution practice test

The best method for confirming the amount of seed or fertilizer to be distributed, is to be done at the actual job site, as follows:

- Use the actual tractor and operator which will be used on the job, if possible;
- Make sure the tires have the same calibration of 90 PSI, for both the planter and tractor;
- Mark-off the test run distance. As an example, as shown on the table for fertilizer, 100 linear meters;
- Fill the planter's hoppers up to the half-way mark and drive for a few meters to fill the distributors, do this before entering the marked-off test area;
- Place the collectors on the fertilizer outputs (preferably use plastic sacks). The seeding calibration should be done on the actual work area, thus maintaining actual working conditions;
- Drive the tractor on the marked-off test area, using the same working speeds as applied during the whole job;
- Recommended speeds: 4.0 to 6.0 km/h when planting corn/sunflower/beans/sorghum/cotton cleaned in acid, and 6.0 km/h to 8.0 km/h when planting soy.

ATTENTION!
Working speed variations will affect the uniformity of seed distribution. When you change seed lots or fertilizer manufacturer, it is necessary to re-calibrate. It is important to verify all previous adjustments after the end of the first day of planting.

7.3 - Additional calculations for fertilizer distribution

When distributing other quantities of fertilizer, using different spacing and different areas then those listed on the tables, we suggest a quick calculation, where all data used can be substituted for data relevant to your requirements, simply use the formula listed below, which has the following elements:

a = Area to be fertilized (m²).

b = Row spacing between lines (m).

c = Amount of fertilizer to be distributed on the area (kg).

d = Run distance to be used on the seed delivery test (m).

x = Amount of grams to be delivered in “d” ?

Formula: $x = \frac{b \times c}{a} \times d$

Example:

a= 10,000 m²
b= 0.90 m
c= 250 kg
d= 50 m
x = ?

$x = \frac{0.90 \times 250}{10000} \times 50$

$x = 0.0225 \times 50$

x= 1.125 kilos or 1125 grams at 50 meters in each line

Next, adjust the implement to distribute the quantities found or the nearest value, and apply on the marked-off area to perform the test.

NOTE!
When fertilizing with tiller shanks, note that they have multiple work position adjustment options. See section 5.9 on page 29.

8 - OPERATIONAL KEY POINTS

- Re-tighten nuts and bolts after the first day of planting.
- Check all pins and cotter-pins.
- Be aware of the required lubrication intervals.
- The proper tire calibration is (90 PSI), to be applied to both and should be maintained for planting uniformity.
- Check the seed hoppers twice a day, if necessary, remove any chemical product residue built-up.
- Verify for the proper operation of the fertilizer distribution system at least twice a day.
- Maintain the implement leveled.

- Periodically check the adjustments made at the beginning of the planting.
- Pay close attention to the fertilizer placement in relationship to the seed placement.
- Pay close attention to seeding depths and the closing wheel tension.
- It is important to maintain a constant working speed throughout the whole planting.
- The tractor`s draw bar should remain fixed.
- Correctly use the line markers to avoid future waste.
- Never maneuver or drive in reverse with the lines in the ground.
- When doing any inspection on the implement, it must be lowered to the ground, and the tractor`s engine must be turned-off.

As stated earlier, planters have many adjustments, but only the actual job site can best determine the proper adjustments.

To adjust and verify the machine`s cutting parts, disengaged the ratchets to avoid wastage.

9 - FERTILIZER TILLAGE

9.1 - Cutting disc 18” or 20” with backed-off shanks

This assembly package allows the placement of fertilizer on the same row below the seeding. These ripper shanks are used only when the machine is being used for planting larger grains.

The backed-off ripper shanks system with cutting discs, is recommended for use in terrain with low ground coverage, maximum 3 ton/ha, because in terrain with higher ground coverage there may occur clogging-up of the cutting discs and the backed-off ripper shanks.

9.2 - Triple disc - cutting disc 18”, 20” with staggered tiller shanks

This assembly package is recommended for soil with low compaction, due to the lower cutting demands with relationship to the plow shank or backed-off shank.

Uses the same cutting disc package with the backed-off shank, the only modification is the mounting of tiller shank with staggered discs.

10 - SEEDING TILLAGE

10.1 - Row Flexible with staggered tiller

Staggered dual discs, one at 16” and the other at 15.5” diameter, with internal adjustable scrappers.

NOTE!
See section 5.6, Seed line down-pressure adjustment, on page 27.

11 - TILLER ASSEMBLY WITH AUTO-RELEASE

As complex as its construction may be, the operation of the tiller release assembly is very simple:

1 - While the shank operates in the direction of the job, it should only encounter the resistance found in the soil, being its normal operation. Its maximum working depth is 12 cm.

2 - When the line receives a sudden impact from a rock, root, or other obstacle, the shank assembly will disarm itself, thus allowing the line to pass-on without damaging it.

3 - After passing over the obstacle, the shank will return to its original state automatically, without having to re-arm the mechanism. The whole process happens without the operator having to leave the tractor.

On extremely hard or compacted soils, there may be a need to raise the machine so that the shank latch can arm itself again.

For proper operation of the auto-release shank assemblies, periodic lubrication should be administered to key points (A), doing so will retard premature ware and tare, and poor system operation (Figure 77).

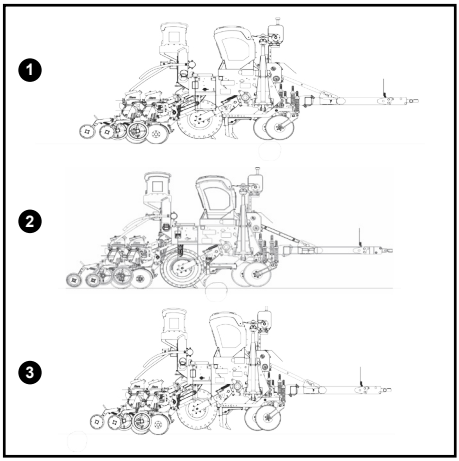

Figure 76

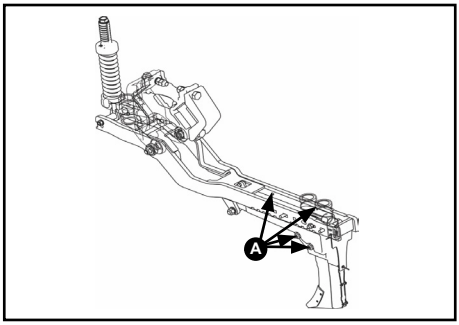

Figure 77

Should the need arise to disassemble the latching shank assembly for maintenance, it will be necessary to remove the tension on the spring (D), to do so screw the rod (A) on the shaft (C), next turn the nut (B) and locking nut (F) until the spring is loose, and it should not be applying any tension on the housing, only then should you remove the nuts and screws (E) now you can safely disassemble the shank package.(Figure 78).

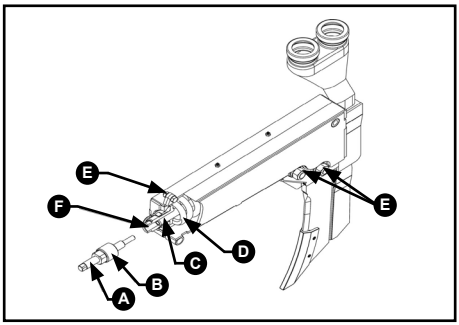

Figure 78

12 - CLOSING WHEELS

When there is a need to raise the closing wheel (A), be it to transport or whatever the case may be, remove pin (B) so that when wheel (A) is raised, the spring (C) will not exceed its travel limits, which can damage the system operations.

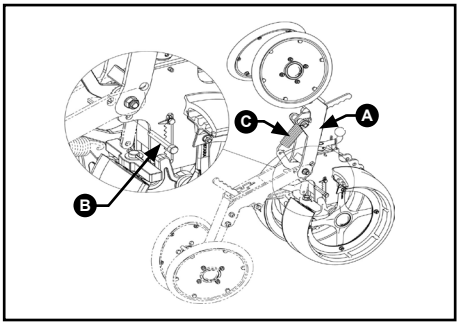

Figure 79

13 - PNEUMATIC METERING

13.1 - Pneumatic system

The Precision Seeding Distribution System (DPS) is compact and easy to clean. To assemble, disassemble, and or to have access to its main components,there is no need for tools.

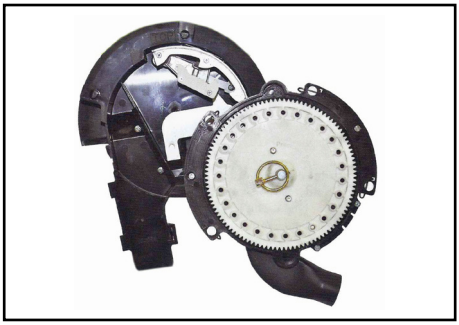

Figure 80

13.1.1 - Double seed eliminator

The organizer has five rods for separating the seeds. There is no need for adjustment or calibration, regardless of the seed size, since it is mounted on a system of springs.

Figure 81

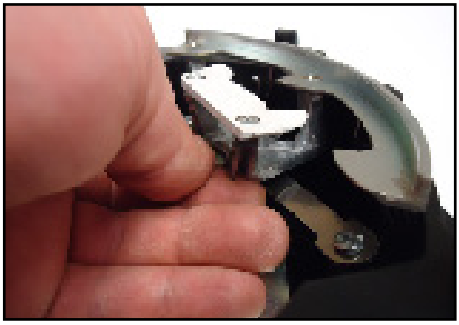

Figure 82

13.1.2 - Vacuum system efficiency

It has a smaller vacuum chamber, in relationship to other conventional feeders.

Sealed to a high standard of efficiency, thus fully optimizing the vacuum during seed suction and ejection, putting a lower load demand on the turbine, and consequently lowering the tractor`s fuel consumption.

Facilitates the seed adhesion to the seed distribution disk, thus avoiding delivery failures due to bumps or shocks, guaranteeing higher precision and agility during planting.

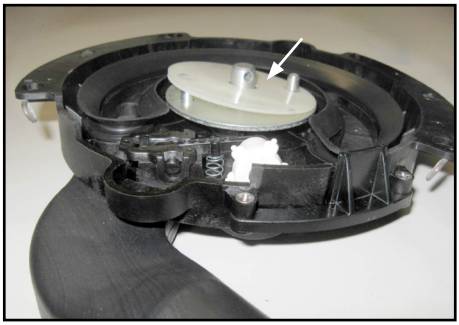

Figure 83

Due to its highly efficient sealing and smaller vacuum chamber, thus allowing the system to operate without the use of the SHS system.

The system requires a hydraulic flow rate between 16 to 20 liters/min.

Has spacer shims used to adjust the disk positioning with relation to sealing needs (Figure 83).

Equipped with a seed ejector (Figure 84).

The meter is also equipped with a seed size adjustment (Figure 85)(Table 6).

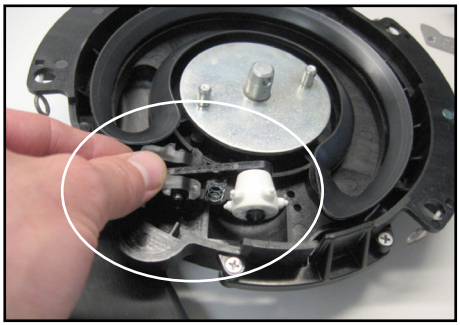

Figure 84

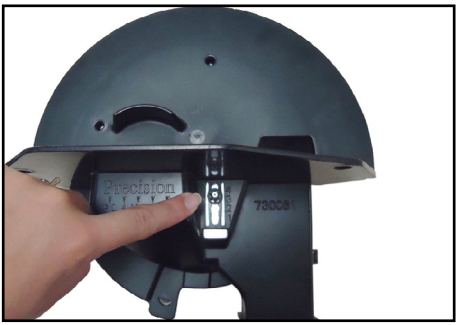

Figure 85

CROP	POSITION
Small seeds	1
Corn, soy	2
Large seeds	3 - 4

Table 6

13.1.3 - Basic cares

- Be careful when adjusting the disk height, done with shims (Figure 86), and when replacing the ejector, make sure that the gasket lip does not remain under the ejector, as shown on (Figure 87).

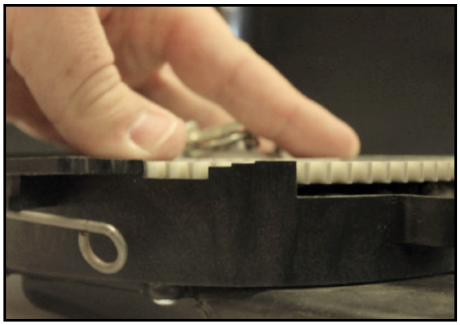

Figure 86

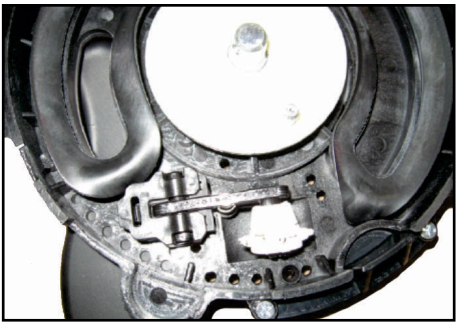

Figure 87

13.1.4 - Specialized seed conductor tube

Uses a seed conductor tubes which was specially developed with special materials and processes, having multi-angles and surfaces.

- Thus providing for a smooth seeding flow all the way down to ground placement, reducing external seed damages.

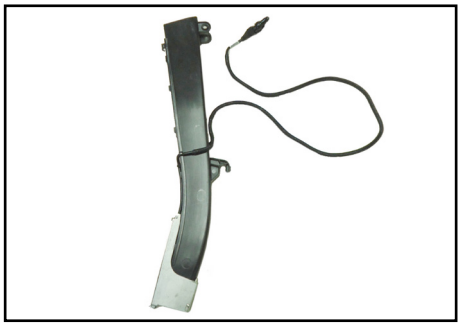

Figure 88

13.1.5 - Sensor

Equipped with a state of the art sensor, which defines the seeding stream using capacitance waves, thus guaranteeing an accurate reading, this same signal defines the seeding density of what is currently being planted.

The sensor is located at the tip end of the conductor tube, there it can identify any possible failures at the exact moment that the seed actually reaches the ground.

As the seed travels, it does not touch the sensor, thus reducing considerably the noise chatter, which is not found in conventional sensors.

The sensor is connected to the Topper, thus displaying the seed flow rates in real time, by rows, by meters and also any possible blockages.

The sensor has the ability to adapt itself automatically to residual built-up tolerance levels, which will be displayed on the Topper.

14 - CHECKING SEED POPULATION

NOTE!
During shallow planting, with the closing wheels raised, the seeds tend to roll or jump. This will have a direct impact on the precision of seed spacing.

- Before starting to plant, set each feeder depth lever at various level positions.
- If possible raise the closing wheels in a way that leaves the seeded furrows open.

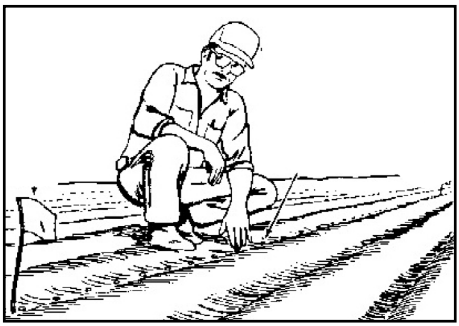

Figure 89

- Plant for a short distance and check to see if the seeds are visible in the furrow.

- Adjust the depth as needed.
- Count the seeds and check for double seeding in each row. The meter with the best seeding pattern should have its adjustment settings copied and applied to all other meters.

If the field data suggests that the implement is planting at significantly different rates then as specified on the seed transmission selection table, check the items below, in the order listed:

- Regarding double seeding or spotty disc seeding, these can be attributed to certain factors like, excessive speeds, extremely irregular terrain, seeding tube position and type, and furrowing footprints.
- Verify that all transmission gears match the commodity rate tables.

Excessive blockage on the units can contribute to low seeding population and reduced seed spacing control. Increase the unit pressure, or drive the implement at a slower speeds to reduce the line blockages on the unit.

- Verify that the implement's driving wheels slippages are within normal limits.

Crop residue, tire air pressures, soil conditions and unit pressure can all contribute to the driving wheel slippages.

15 - VACUUM METER

If all is configured correctly and the seeding population density is too high/thick, the vacuum setting should be reduced by increments of 1 mbar until the proper population density is reached. If the seeding population density is too low/thin, the vacuum setting should be raised in increments of 0.5 mbar until it reaches the correct population density.

16 - PNEUMATIC TURBINE

16.1 - Pneumatic system

On pneumatic planting systems, negative pressure or vacuum is done using a turbine. On Stara's implements, the turbine is mounted on its chassis.

It is driven by a hydraulic motor, which is hooked-up the to the assembly, as shown on the image to the side.

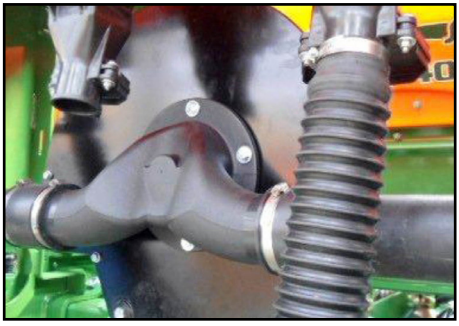

Figure 90

16.2 - Pneumatic system main components

The turbine package is made-up of an internal rotor, vanes and internal roller bearing system (fixture and roller bearings).

Through the spinning of the rotor, the vanes suction the air from the ducts and from the seeding meters.

The maximum recommended rotor speed should be 540 rpm. Doing so, you will obtain optimum rates, especially when using larger seeds which are heavier.

Figure 91

17 - HYDRAULIC MOTOR

The hydraulic motors used on Stara's implements have an output rate of 30 liters. Check the assembly to the side, making note of its parts.

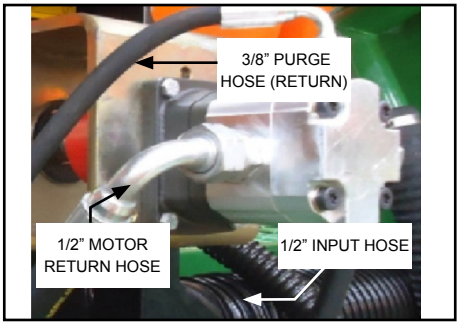

Figure 92

18 - FLOW-RATE CONTROL VALVE

The control valve adjusts the oil flow rate and the working pressure. When the flow rates are increased so does the turbine motor rpm, thus increasing the vacuum pressure.

NOTE!
See section 5.16, Adjusting the vacuum level, on page 34.

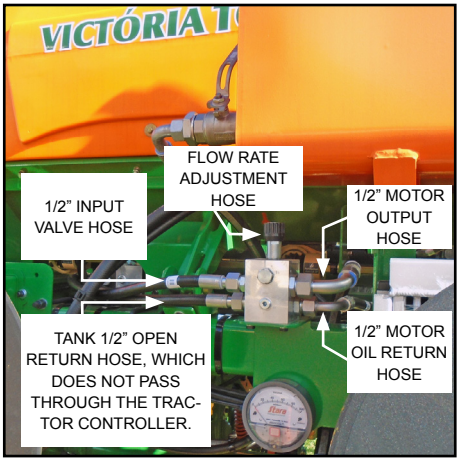
FLOW RATE ADJUSTMENT HOSE
1/2" INPUT VALVE HOSE
1/2" MOTOR OUTPUT HOSE
TANK 1/2" OPEN RETURN HOSE, WHICH DOES NOT PASS THROUGH THE TRACTOR CONTROLLER.
1/2" MOTOR OIL RETURN HOSE

Figure 93

19 - AIR DUCTS

The air duct system is made up of planting duct lines, which are hooked-up to the main air duct.

Stara's air duct system is linear, mounted on the machine's chassis and secured by clamps.

The main supply line is made of rigid tubing, while the feed lines are of flexible tubings.

Figure 94

20 - MAINTENANCE

After a period of planting has passed, or when planting is done in an area where hay is present, with few light residual remains, making it easy to enter the ducts (Ex. soy over a high yielding wheat straw), it will be necessary to remove the air duct caps for frequent cleaning during the job.

In regions where the soil is extremely sandy, loose and abrasive, we recommend once a year to inspect the turbine rotor vanes, looking for ware and tare. After working many hectares, and in case where there is excessive ware, the rotor should be replaced.

Figure 95

The duct work should be inspected periodically for air leaks, pinched or ripped hoses.

21 - ELECTRICAL SYSTEM

21.1 - Variable Rate System and Stara Planting Monitor - MPS

NOTE!
For information regarding the Variable Rate System and Stara Planting Monitor, consult the Topper 4500 manual (MANU-7310-F45).

22 - TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
Dual discs will not spin	Internal disc scrappers over-adjusted and applying excessive pressure on discs.	Reduce internal disc scrapper pressure adjustments.
	Disc bearing seizing-up.	Replace bearing and lubricate.
	Discs clogged-up with dirt.	Do not drive in reverse with the discs lowered. Adjust the internal disc scrappers.
Discs clogged-up	Soil with excessive moisture.	Do not plant seed while the ground is extremely moist.
	Hay/stubble ground cover poorly shredded and distributed.	Use a hay/stubble chopper and distributor on the combine when harvesting.
Seed tube obstruction	Seeds mixed with hay/ stubble.	Use clean seed.
Damaged seeds	Improper seed disk selected.	Use the proper seed disc type.
	Excessive shaft ware.	Replace worn bases.
	Disc installed incorrectly (reversed).	Note the proper orientation of the discs.
Irregular seed distribution	Improper seed disk selected.	Use the proper seed disc type.
Excessive seeding depth	Depth gauges poorly adjusted.	Properly adjust the depth gauges.
Irregular fertilizer distribution	Fertilizer clumpy and humid.	Dry and grind the fertilizer.
	Uneven line adjustments.	Properly adjust the fertilizer distribution line.

Table 7

WARRANTY CLAIMS
MUST BE KEPT ON FILE

The information contained in this warranty claim has been written, in a generalized way, thus covering your new Stara implement. Should there be the need for additional information regarding the use of your implement, we suggest reading the instruction manual.

All the information contained in this warranty claims are based on the last available data at the time of its publication, being subject to changes without any previous warnings.

Please be aware that, any modifications made to your Stara implement could affect your productivity, safety and operation.

With these modifications, you could jeopardize loosing your contractual warranty agreement issued by Stara S/A Indústria de Implementos Agrícolas.

When purchasing your new Stara implement, demand that your authorized dealership chain completely fill-out this warranty claim, along with explanations regarding the warranty issued by Stara S/A Indústria de Implementos Agrícolas.

STARA'S IMPLEMENTS WARRANTY

1 - BASIC COVERAGE PERIOD

Stara S/A Indústria de Implementos Agrícolas, through its authorized dealership chain, guarantees its implements under normal usage conditions, against parts manufacturing defects or installation, for a total period as defined in the chart below:

IMPLEMENTS	WARRANTY PERIOD
Self-propelled	12 months or 1,000 hours
Tractors	12 months or 1,000 hours
Technology equipment	12 months
Spreaders	6 months
Headers	6 months
Sprayers - Drawn/Hitched	6 months
Planters and Seeders	6 months
Other products	6 months
Original Stara parts and accessories	6 months

The first 90 (ninety) days refer to a legal warranty as defined by the Brazilian courts and, an additional contractual period issued freely by Stara S/A Indústria de Implementos Agrícolas.

The warranty begins at the date of issue of the implement's sales invoice, having as its end user, the first owner.

- NOTE

  The warranty time-frame for parts and components replaced during the basic warranty period, expire on the end date of the contractual warranty as issued by Stara S/A Indústria de Implementos Agrícolas.

1.1 - Accessories

Some implements can be purchased, through the authorized dealerships with pre-installed accessories.

When dealing with accessories, even though genuine Stara parts, its warranty period has no relationship with the implement's warranty time-frame.

Thus, when purchasing your implement, demand all sales receipts for the accessories which were installed on the implement, which will allow you to partake in the said warranties of these items.

For detailed information regarding warranty coverage of genuine Stara accessories, consult item 7 of this document.

1.2 - Transferable warranty

This warranty is totally transferable to the subsequent owners of the implement, as long as the new owner has possession of the original warranty claims document, where all required periodic maintenance are logged, and the starting date of the warranty.

2 - LIMITED WARRANTY COVERAGE

Tires, inner tubes and injection pumps are only directly guaranteed by their manufactures, of the referred components. Stara, through its authorized dealerships, limits itself to only forwarding the respective guarantees to the manufactures (or their authorized distributors) of said components. Stara does not hold itself responsible for a positive or negative solution to a complaint which is presented by the owner. Substituting complete assemblies like an engine, transmission or axles, will only be done if there is no possibility of a partial repair by a technician.

3 - NATURAL WEAR AND TARE PARTS

Substituting parts and components during their normal usage on the implement and, due to natural wear which is common to all parts and components, is not covered by the warranty, as long as it is not related to a manufacturing defect.

Examples of natural wear and tare parts: electrical items; filters; belts; bearings; quick-disconnects; cutting bars; wear shield plates; slide plates; chains; grain tank canvas cover; wind-shield wipers; brake pads, disc brakes and brake shoes; tires; clutch plate, clutch discs and bearings.

4 - ITEMS AND SERVICES NOT COVERED BY THE WARRANTY

Factors out of the control of Stara S/A Indústria de Implementos Agrícolas..

(I) Repairs and adjustments resulting from improper use of the implement (examples: over-speeding the engine, overloading, improper operations), negligence, modifications, alterations, abuses, accidents, improper adjustments and repairs, using non-genuine parts and any other usage contrary to specifications listed on the instruction manual.

(II) Damages to the implement of any sort due to adverse environmental conditions, such as acid rain, reaction to chemical substances, tree sap, salinity, hail, strong winds, lightning, flooding, impact damage by any objects and any other acts of nature.

(III) Failure to perform maintenance on the implement, necessary repairs and adjustments due to improper maintenance (done by a third party or any other non-authorized dealerships), failure to use the implement, the use of fluids (and lubricants) not recommended by Stara S/A Indústria de Implementos Agrícolas.

(IV) Repairs and adjustments resulting from the use of fuel with poor quality and/or that has been adulterated.

4.1 - Additional expenditures

The warranty does not cover any expenditures for transporting the implement and loss of profits.

4.2 - Adulterated hourmeter

Any factors or evidence which proves that an hourmeter has been changed and tampered with, will give just cause for the cancellation and termination of the warranty.

4.3 - Owner is responsible for maintenances

Engine adjustments, lubrication, cleaning, filter replacements, fluids, natural wearing parts, are some of the items used by the implement on their scheduled maintenances. Thus, these are charges incurred by the owner of the implement.

5 - OWNER'S RESPONSIBILITIES

5.1 - Getting warranty service

The owner has the responsibility to deliver his implement for repairs at any Stara authorized dealership, in order to maintain his warranty.

Fundamental conditions when honoring the warranty:

(I) The claim must be directed to a Stara authorized dealership, after it has been established that there is evidence of a nonconformity.

(II) The warranty document for the implement must be presented and, that it be properly filled-out, along with it all maintenance records as required by the scheduled maintenances.

5.2 - Maintenance

It is the owner's responsibility for the proper operation, required operator training of those who will operate the implement, not limiting it to those required by law, like maintenance and care, according to the instructions listed in the instruction manual.

6 - HOW TO OBTAIN TECHNICAL ASSISTANCE

6.1 - Client satisfaction

Stara S/A The Agricultural Implements Company, is constantly looking for ways to improve its implements and to client satisfaction.

All Stara authorized dealerships maintain a full arsenal of tools, equipment and technicians highly trained by Stara S/A The Agricultural Implements Company, so that your implement has the best repairs and services, all with a high standard of quality. Thus, when needed seek your nearest Stara authorized dealership.

6.2 - Required information

In case there is the need to repair your Stara implement, keep on-hand the following information and documents:

(I) A clear description of the nonconformity, including the conditions under which it occurred.

(II) Warranty claim document, instruction manual and all receipts which need to be legible, as proof for oil changes not done by Stara authorized dealerships.

- IMPORTANT

  The warranty claim document is required to have, a logged registry (stamps) of all check-ups performed, according to the scheduled hours and time-frames.

  All receipts needed as proof of oil changes not done by Stara approved dealerships.

  It is the implement's owner's responsibility to retain all receipts in a legible manner, as proof for an oil substitution which was done by a third party, and that it is recommended by Stara S/A The Agricultural Implements Company, according to guidelines written in the instruction manual.

  The receipts mentioned above will be required in situations where proof of oil changes are necessary. Thus, when selling the implement, do not forget to supply these receipts to the new owner. If you are purchasing the implement, request this documentation from the previous owner.

- IMPORTANT

  In the event that you need to repair the implement's engine, the above mentioned documents will be required for the warranty claim.

6.3 - Scheduled maintenance program

The scheduled maintenance program for the implement is written in the instruction manual.

In this plan you will find all the required and necessary information for the best operation of your Stara implement.

- IMPORTANT

  All and any costs with reference to labor costs and parts and components replacement foreseen in the maintenance program will be the responsibility of the implement's owner, except for changes paid for by the manufacturer.

6.4 - Implement's scheduled maintenance plan

All scheduled maintenances listed in the instruction manual, will be done exclusively by a Stara authorized dealership, also it shall be logged-in on the scheduled maintenance pages, which are found at the end of this warranty claim.

The simple changing of oil and filters, as shown on the scheduled maintenance guidelines, does not omit the mandatory requirements for regular scheduled maintenances.

Not complying with the regular scheduled maintenance program can compromise the proper operation of your Stara implement, leading to possible nonconformities, which can be prevented by implementing a regular scheduled maintenance program.

Stara S/A The Agricultural Implements Company reserves the right to make that judgment. Therefore, we recommend that the whole scheduled maintenance program be fulfilled, so that such situations can be avoided.

7 - WARRANTY OF GENUINE STARA REPLACEMENT PARTS

7.1 - Purchased and installed at an authorized Stara dealerships

In order to maintain the warranty of the genuine Stara replacement parts, they are required to be purchased and installed by authorized Stara dealerships.

So that the warranty can be honored, the original receipt for the genuine Stara replacement part, along with the Service Order for the installation of the replacement part on the implement will be required as proof for the warranty period.

7.2 - Third party installation of purchased Stara authorized replacement parts

Third party installation of purchased Stara authorized replacement parts, are covered exclusively under the legal warranty of 90 (ninety) days, against defects when proven to be due to the manufacturing defects.

So that the warranty can be honored, the original authorized dealer receipt of purchase will be required, to prove its validity for the warranty period.

- IMPORTANT

  The warranty of the Stara genuine replacement parts, like the implement's warranty, do not cover the natural wear of the parts, as long as it does not deal with manufacturing defects.

  Stara will only honor warranties of genuine parts purchased at authorized dealerships.

8 - WARRANTY OF GENUINE STARA ACCESSORIES

8.1 - Purchased and installed at Stara authorized dealerships

In order to honor the warranty of the Stara accessories, they must be purchased and installed by authorized Stara dealerships. So that the warranty can be honored, the original receipt for the Stara genuine accessory, along with the Service Order for its installation on the implement will be required as proof for the warranty period

8.2 - Third party installation of purchased Stara authorized accessories

Third party installation of purchased Stara authorized genuine accessories, are covered exclusively under the legal warranty of 90 (ninety) days, against defects when proven to be due to the manufacturing defects.

So that the warranty can be honored, the original authorized dealer receipt of purchase will be required, to prove its validity for the warranty period.

- IMPORTANT

  The warranty period for genuine Stara accessories is exclusive and has nothing to do with the warranty period of the implement.

  The warranty of the Stara genuine accessories, like the implement's warranty, do not cover the natural wear of the parts, as long as it does not deal with manufacturing defects.

9 - IMPORTANT INFORMATION

9.1 - Accessories, replacement parts and modifications to your implement Stara

A vast number of replacement parts and accessories, but not genuine to Stara implements are available on the market. Using these accessories or replacement parts, can affect the safety and operation of your Stara implement, even though that these products have been approved by current local laws. Stara S/A Indústria de Implementos Agrícolas, does not accept responsibility for and does not warrant these replacement parts or accessories, nor their installation or usage.

The implement should not be modified with non-genuine products. Modifications with products non-genuine Stara can affect its performance, safety and durability.

Damages or problems which are the result of these types of modifications will not be covered by the warranty.

10 - SCHEDULED MAINTENANCE LOG

IMPLEMENT				
	Self-propelled	**Sprayers Drawn/Hitched**	**Planters and Seeders**	**Spreaders**
Technical Delivery Check-up	X	X	X	X
100 hours Check-up				
250 hours Check-up	X			
500 hours Check-up	X			
1000 hours or 1 year Check-up	X			
End of warranty visit	1 year or 1000 hours	6 months	6 months	6 months

IMPLEMENT				
	Headers	**Technology equipment**	**Tractors**	**All other implements**
Technical Delivery Check-up	X	X	X	X
100 hours Check-up			X	
250 hours Check-up			X	
500 hours Check-up			X	
1000 hours or 1 year Check-up			X	
End of warranty visit	6 months	1 year	1 year or 1000 hours	6 months

Stara
Constant Evolution

WARRANTY REGISTRATION

CLIENT COPY

VICTORIA TOP PNEUMATIC PLANTER

CLIENT AND IMPLEMENT INFORMATION REGISTRATION

IMPLEMENT:
MODEL:
SERIAL NUMBER:
INVOICE DATE: _____/_____/_____
OWNER'S NAME:
ADDRESS:
CITY:
STATE: COUNTRY:

ACKNOWLEDGMENT RECEIPT OF WARRANTY CLAIMS TERMS

I do hereby declare through this witness, that I have received, read and I am aware of the terms and conditions contained in the warranty document, which was delivered by an authorized Stara representative.

OWNER'S SIGNATURE:_____

NAME OF THE AUTHORIZED STARA DEALERSHIP:_____

ADDRESS OF THE AUTHORIZED STARA DEALERSHIP_____

_____

STAMP OF THE AUTHORIZED STARA DEALERSHIP:_____

SIGNATURE OF THE AUTHORIZED STARA DEALERSHIP:_____

Stara
Constant Evolution

WARRANTY REGISTRATION

DEALERSHIP COPY

VICTORIA TOP PNEUMATIC PLANTER

CLIENT AND IMPLEMENT INFORMATION REGISTRATION

IMPLEMENT:	
MODEL:	
SERIAL NUMBER:	
INVOICE DATE: _____/_____/_____	
OWNER'S NAME:	
ADDRESS:	
CITY:	
STATE:	COUNTRY:

ACKNOWLEDGMENT RECEIPT OF WARRANTY CLAIMS TERMS

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NAME OF THE AUTHORIZED STARA DEALERSHIP:_____

ADDRESS OF THE AUTHORIZED STARA DEALERSHIP_____

_____

STAMP OF THE AUTHORIZED STARA DEALERSHIP:_____

SIGNATURE OF THE AUTHORIZED STARA DEALERSHIP:_____

Stara
Constant Evolution

TECHNICAL DELIVERY TERMS

CLIENT COPY

(TO BE COMPLETED BY THE TECHNICIAN)

VICTORIA TOP PNEUMATIC PLANTER

DELIVERY DATE: _____/_____/_____	
DEALERSHIP INVOICE:	DATE: _____/_____/_____
MANUFACTURER INVOICE:	DATE: _____/_____/_____

CLIENT INFORMATION

NAME:	CONTACT:
ADDRESS:	CITY:
STATE:	COUNTRY:

PRODUCT INFORMATION

MODEL:	
MANUFACTURED DATE: _____/_____/_____	SERIAL NUMBER:

TECHNICIAN RESPONSIBILITIES

( ) Verify general conditions of the implement (defects, dents, and other issues).

Notes:_____

( ) Check the tractor's hitch pin diameter against the hitch's bushing.

( ) Hook-up the implement, operate the hydraulic system, remove the transporting blocks, check the opening and closing of the row markers.

( ) Check on the need for using job safety lock-out blocks.

( ) Level the implement.

( ) Adjust the down-force spring pressures on the cutting discs.

( ) Adjust the spring tension of the seeding lines.

( ) Adjust the gauge wheel angle and depth for seed distribution.

( ) Adjust the closing wheel tension, and if necessary adjust the furrow closing angle.

( ) Deliver the instruction manual.

FERTILIZER METERING SYSTEM

( ) Verify that the auger is sized correctly for the dosages to be applied.

( ) Adjust the transmission according to the required dosages to be applied.

MECHANICAL SEED DISTRIBUTION SYSTEM

( ) Confirm that the seed disk matches the commodity and the seed screen.

( ) Check the wheel speed sensor.

( ) Hook-up and check the pump alignment with the tractor's PTO.

( ) Check the oil level.

( ) Note on the controller the lever positions for pressure and return when hooking-up the variable rate hoses.

OPERATOR TRAINING ON

( ) Lubricating the implement.

( ) Tightening hardware.

( ) Adjusting extender tensions.

( ) Using job lockout blocks.

( ) Leveling the implement.

( ) Seed distribution adjustments (transmission).

( ) Replacing seed disks, rings and sprockets for seed distribution.

( ) General line tension adjustments.

( ) Proper job speeds.

( ) General implement housekeeping.

( ) The instruction manual, warranty certificate and warranty claims.

( ) Show safety procedures described in this manual.

( ) Show the test mode in order to verify commodity calibrations.

( ) Show the proper way to configure the Topper 4500 VT when applying variable rates or fixed.

( ) Whenever possible use the wheel sensor, since it is the most accurate way to measure speed during the application.

( ) Warning decals: Planting mode: Normal operation, in order to reduce seed mounts when stopping mid-stream of a row. Inform on how to reduce the seeding dead-time at beginning of the planting.

( ) The instruction manual, warranty terms and the warranty certificate.

ELECTRO/HYDRAULIC OPERATIONS (VT)

( ) Verify communication with the PODs.

( ) Configure the implement accordingly, either 1 or 2 tanks (seed and fertilizer), and 1, 2 or 3 sections.

( ) Confirm that the measurements, row spacing and the number of lines configured on the Topper 4500 match the implement's configurations.

( ) Calibrate the lift sensor to the desired starting position and the end of application position, according to the height of the implement.

( ) Calibrate the wheel speed sensor according to the speed factor, in order to verity that the sensor distance reading matches the wheel toothed gear distance.

( ) In case that the implement has a sectional shut-down system, verify that the hydraulic valves have power when the selected section loses power when turned-off by the sectional POD.

( ) Verify that the product calibration has been enabled in either seeds/meters or kg/ha, so that the calibration factor can be adjusted according to the type of product being used.

( ) Show the test mode in order to verify product calibration.

( ) Explain the proper way to configure the Topper 4500 VT when applying with variable rates or fixed.

( ) Whenever possible use the wheel sensor, since it is the most accurate way to measure speed during the application.

INSTALLING THE ELECTRICAL SYSTEM ON THE TRACTOR (OPTIONAL)

( ) Install the Topper 4500 controller cable harness.

( ) Install the FLEX PLT controller cable harness.

( ) Install the Topper 4500 in the cabin using the suction cup kit.

( ) Install the FLEX PLT in the cabin using the suction cup kit.

( ) Install the sectional POD in the cabin using the suction cup kit.

( ) Install the radiator starter switch in the cabin using the suction cup kit.

( ) Install the radiator power cable directly to the battery, connect to the "ER".

MPS - STARA PLANTING MONITOR

( ) Explain the keypad functions and the meaning of each LED indicator (FLEX MPS) or MPS screen (Topper 4500) on the console. Give a general explanation of how the MPS system works, and how the connections are made.

( ) Explain the importance of proper installation, specially of the possible abrasions of the harnesses, which need to be handled with special care, in order to provide for a proper working system.

( ) Show the maintenance kit, the items in the kit, and explain the importance of always having the kit onboard the tractor, should the need arise to have repairs or maintenance done in the field.

TECHNICIAN RESPONSIBILITIES

( ) Review and discuss the following items: the console, power cable, connection cables, adaptors, sensors, Pods and verify that the maintenance kit is being delivered to the client.

( ) Check the parts kit for possible defects.

( ) Make sure that the controller is mounted in an easily accessible area with good open vision during its operation.

( ) Install the power/communication cable carefully so that it will not interfere with any moving parts, nor be exposed to friction or abrasions, keep away from extreme heat sources or radio frequency cables, which are open sources for poor operations and or sources for possible crushing.

( ) Note 1: Always install the power cable directly to the battery, since any connections to external power plugs or connecting to other jumper wires, which are not part of the original equipment, may be future sources for poor implement operations.

( ) Note 2: Should there be the need to weld on the tractor or on the implement, disconnect all implement power cables from the battery, to avoid the possible damage to the implement.

( ) Note 3 : If there is the need to install cables on the implement lines, do so with the lines raised and the implement elevated. Do not forget to use the hydraulic jack and to install lockout blocks on the hydraulic cylinder.

( ) Check the battery and its condition.

( ) Connect the power/communication cable to the console and connect the communication to the first MPS POD on the implement.

( ) Verify that all sensor connections are correctly connected.

( ) Turn-on the console and verify that the system communication is operating normally and that there are no error messages on the console.

( ) Make the installation mode (Flex MPS), or the line configurations (Topper 4500), so that all sensors/adaptors are acknowledged, and that the PODs are installed.

( ) Execute the test mode to verify the that line installation order are correct, and that the MPS is in good working condition.

ADDITIONAL INFORMATION

_____

_____

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_____

We declare that the implement referenced in this document, is being delivered under normal conditions of use, as described and, with the various adjustments and instructions.

_____, _____/_____/_____

Location **Date**

_____

CLIENT SIGNATURE

_____

TECHNICIAN OR REPRESENTATIVE SIGNATURE

Stara
Constant Evolution

TECHNICAL DELIVERY TERMS

DEALERSHIP COPY

(TO BE COMPLETED BY THE TECHNICIAN)

VICTORIA TOP PNEUMATIC PLANTER

DELIVERY DATE: _____/_____/_____	
DEALERSHIP INVOICE:	DATE: _____/_____/_____
MANUFACTURER INVOICE:	DATE: _____/_____/_____

CLIENT INFORMATION

NAME:	CONTACT:
ADDRESS:	CITY:
STATE:	COUNTRY:

PRODUCT INFORMATION

MODEL:	
MANUFACTURED DATE: _____/_____/_____	SERIAL NUMBER:

TECHNICIAN RESPONSIBILITIES

( ) Verify general conditions of the implement (defects, dents, and other issues).

Notes:_____

( ) Check the tractor's hitch pin diameter against the hitch's bushing.

( ) Hook-up the implement, operate the hydraulic system, remove the transporting blocks, check the opening and closing of the row markers.

( ) Check on the need for using job safety lock-out blocks.

( ) Level the implement.

( ) Adjust the down-force spring pressures on the cutting discs.

( ) Adjust the spring tension of the seeding lines.

( ) Adjust the gauge wheel angle and depth for seed distribution.

( ) Adjust the closing wheel tension, and if necessary adjust the furrow closing angle.

( ) Deliver the instruction manual.

FERTILIZER METERING SYSTEM

( ) Verify that the auger is sized correctly for the dosages to be applied.

( ) Adjust the transmission according to the required dosages to be applied.

MECHANICAL SEED DISTRIBUTION SYSTEM

( ) Confirm that the seed disk matches the commodity and the seed screen.

( ) Check the wheel speed sensor.

( ) Hook-up and check the pump alignment with the tractor's PTO.

( ) Check the oil level.

( ) Note on the controller the lever positions for pressure and return when hooking-up the variable rate hoses.

OPERATOR TRAINING ON

( ) Lubricating the implement.

( ) Tightening hardware.

( ) Adjusting extender tensions.

( ) Using job lockout blocks.

( ) Leveling the implement.

( ) Seed distribution adjustments (transmission).

( ) Replacing seed disks, rings and sprockets for seed distribution.

( ) General line tension adjustments.

( ) Proper job speeds.

( ) General implement housekeeping.

( ) The instruction manual, warranty certificate and warranty claims.

( ) Show safety procedures described in this manual.

( ) Show the test mode in order to verify commodity calibrations.

( ) Show the proper way to configure the Topper 4500 VT when applying variable rates or fixed.

( ) Whenever possible use the wheel sensor, since it is the most accurate way to measure speed during the application.

( ) Warning decals: Planting mode: Normal operation, in order to reduce seed mounts when stopping mid-stream of a row. Inform on how to reduce the seeding dead-time at beginning of the planting.

( ) The instruction manual, warranty terms and the warranty certificate.

ELECTRO/HYDRAULIC OPERATIONS (VT)

( ) Verify communication with the PODs.

( ) Configure the implement accordingly, either 1 or 2 tanks (seed and fertilizer), and 1, 2 or 3 sections.

( ) Confirm that the measurements, row spacing and the number of lines configured on the Topper 4500 match the implement's configurations.

( ) Calibrate the lift sensor to the desired starting position and the end of application position, according to the height of the implement.

( ) Calibrate the wheel speed sensor according to the speed factor, in order to verity that the sensor distance reading matches the wheel toothed gear distance.

( ) In case that the implement has a sectional shut-down system, verify that the hydraulic valves have power when the selected section loses power when turned-off by the sectional POD.

( ) Verify that the product calibration has been enabled in either seeds/meters or kg/ha, so that the calibration factor can be adjusted according to the type of product being used.

( ) Show the test mode in order to verify product calibration.

( ) Explain the proper way to configure the Topper 4500 VT when applying with variable rates or fixed.

( ) Whenever possible use the wheel sensor, since it is the most accurate way to measure speed during the application.

INSTALLING THE ELECTRICAL SYSTEM ON THE TRACTOR (OPTIONAL)

( ) Install the Topper 4500 controller cable harness.

( ) Install the FLEX PLT controller cable harness.

( ) Install the Topper 4500 in the cabin using the suction cup kit.

( ) Install the FLEX PLT in the cabin using the suction cup kit.

( ) Install the sectional POD in the cabin using the suction cup kit.

( ) Install the radiator starter switch in the cabin using the suction cup kit.

( ) Install the radiator power cable directly to the battery, connect to the "ER".

MPS - STARA PLANTING MONITOR

( ) Explain the keypad functions and the meaning of each LED indicator (FLEX MPS) or MPS screen (Topper 4500) on the console. Give a general explanation of how the MPS system works, and how the connections are made.

( ) Explain the importance of proper installation, specially of the possible abrasions of the harnesses, which need to be handled with special care, in order to provide for a proper working system.

( ) Show the maintenance kit, the items in the kit, and explain the importance of always having the kit onboard the tractor, should the need arise to have repairs or maintenance done in the field.

TECHNICIAN RESPONSIBILITIES

( ) Review and discuss the following items: the console, power cable, connection cables, adaptors, sensors, Pods and verify that the maintenance kit is being delivered to the client.

( ) Check the parts kit for possible defects.

( ) Make sure that the controller is mounted in an easily accessible area with good open vision during its operation.

( ) Install the power/communication cable carefully so that it will not interfere with any moving parts, nor be exposed to friction or abrasions, keep away from extreme heat sources or radio frequency cables, which are open sources for poor operations and or sources for possible crushing.

( ) Note 1: Always install the power cable directly to the battery, since any connections to external power plugs or connecting to other jumper wires, which are not part of the original equipment, may be future sources for poor implement operations.

( ) Note 2: Should there be the need to weld on the tractor or on the implement, disconnect all implement power cables from the battery, to avoid the possible damage to the implement.

( ) Note 3 : If there is the need to install cables on the implement lines, do so with the lines raised and the implement elevated. Do not forget to use the hydraulic jack and to install lockout blocks on the hydraulic cylinder.

( ) Check the battery and its condition.

( ) Connect the power/communication cable to the console and connect the communication to the first MPS POD on the implement.

( ) Verify that all sensor connections are correctly connected.

( ) Turn-on the console and verify that the system communication is operating normally and that there are no error messages on the console.

( ) Make the installation mode (Flex MPS), or the line configurations (Topper 4500), so that all sensors/adaptors are acknowledged, and that the PODs are installed.

( ) Execute the test mode to verify the that line installation order are correct, and that the MPS is in good working condition.

ADDITIONAL INFORMATION

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We declare that the implement referenced in this document, is being delivered under normal conditions of use, as described and, with the various adjustments and instructions.

_____, _____/_____/_____

Location **Date**

_____

CLIENT SIGNATURE

_____

TECHNICIAN OR REPRESENTATIVE SIGNATURE

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TECHNICAL CHECK-UP TERMS

CLIENT COPY

(ADJUSTMENTS AND CLIENT ORIENTATION TO BE PERFORMED WITHIN A 6 MONTHS PERIOD, AFTER DELIVERY)

VICTORIA TOP PNEUMATIC PLANTER

CHECK-UP DATE: _____/_____/_____
NUMBER OF HECTARES:

SERIAL NUMBER:	NUMBER OF HOURS:
OWNER:	DATE: _____/_____/_____
CITY:	STATE:
DEALERSHIP:	
TECHNICIAN:	

DESCRIPTION OF SERVICES RENDERED

( ) Check general conditions of the implement.

( ) Check all bearing and rollers in general.

( ) Check the row flex bushings.

( ) Check and adjust the transmission as required.

( ) Inspect the sensors.

( ) Verify the controller software for latest updates, as required.

( ) Recalibrate the implement, and at the same time use it to train the operator.

( ) Periodic maintenance orientation.

( ) Clean hydraulic system filters on implements with SHS every 250 hours.

We declare that the referenced implement on this form, had the above check-up procedures and/or orientations performed, as described above.

DEALERSHIP STAMP AND SIGNATURE:_____

CLIENT SIGNATURE:_____

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Constant Evolution

TECHNICAL CHECK-UP TERMS

DEALERSHIP COPY

(ADJUSTMENTS AND CLIENT ORIENTATION TO BE PERFORMED WITHIN A 6 MONTHS PERIOD, AFTER DELIVERY)

VICTORIA TOP PNEUMATIC PLANTER

CHECK-UP DATE: _____/_____/_____
NUMBER OF HECTARES:

SERIAL NUMBER:	NUMBER OF HOURS:
OWNER:	DATE: _____/_____/_____
CITY:	STATE:
DEALERSHIP:	
TECHNICIAN:	

DESCRIPTION OF SERVICES RENDERED

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We declare that the referenced implement on this form, had the above check-up procedures and/or orientations performed, as described above.

DEALERSHIP STAMP AND SIGNATURE:_____

CLIENT SIGNATURE:_____

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